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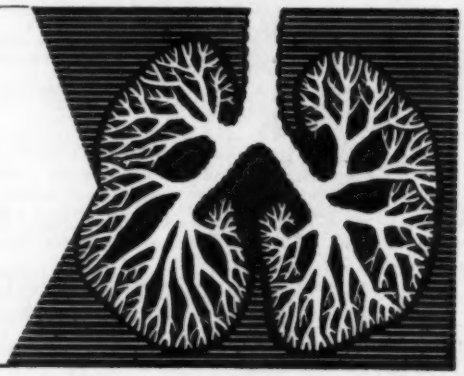

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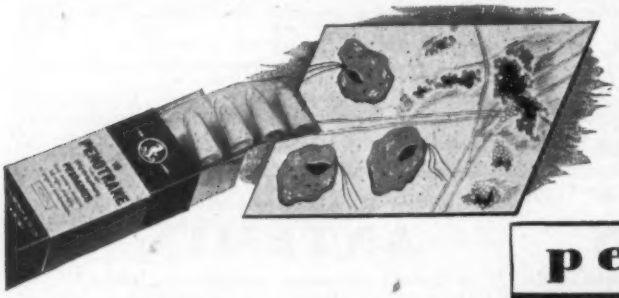

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The powerful trichomonacidal and fungicidal properties of PENOTRANE present the greatest advantage in the treatment of vaginal discharge, particularly trichomonal vaginitis and moniliasis. PENOTRANE is also strongly bactericidal and it deeply penetrates the vaginal mucosa. Both the Pessaries and Vaginal Cream are buffered to approximate the normal vaginal acidity.

INDICATIONS: ★ Vaginal Discharge due to trichomonal, monilial and coccal infections. ★ Pruritus Vulvae. ★ Obstetrical Lubrication. ★ Pre-operative Skin Disinfection.

Literature and professional samples on request.

AVAILABILITY:

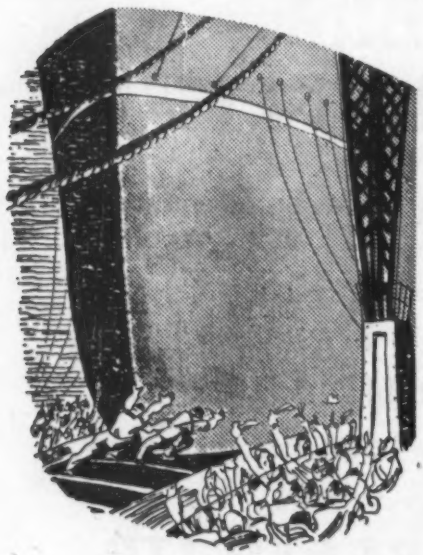
PENOTRANE	Applicator Sets—containing Penotrane Vaginal Cream & disposable applicators.
PENOTRANE	Aqueous Solution—Bottles of 100, 500 and 2,000 c.c.
PENOTRANE	Jelly—Tubes of 1 oz.
PENOTRANE	Pessaries—Cartons of 15 and 100.
PENOTRANE	Powder — Polythene Insufflating Containers.
PENOTRANE	Tincture—Bottles of 15, 100, 500 and 2,000 c.c.

A CWD MEDICAL PRODUCT

WARD, BLENKINSOP & COMPANY, LIMITED

6 HENRIETTA PLACE — LONDON — W.1

Telephone: LANgham 3185. Telegrams: Duochem, Wesdo, London.



Assisting THE MOVEMENT

In cases where colonic stimulation is indicated, 'PETROLAGAR' assists the movement surely but subtly. By supplying an unabsorbable emulsion that augments the intestinal fluid content, it provides a soft ductile fæcal mass that promotes a comfortable, natural bowel action, and encourages the return of normal habit. Agreeable to take, 'PETROLAGAR' is issued in two varieties: Plain and with Phenolphthalein.

Wyeth

'PETROLAGAR'

Trade Mark

EMULSION

John Wyeth & Brother Ltd., Clifton House, Euston Road, N.W.1

The many uses of 'CETAVLON' in general practice

Wounds and burns, etc. A 0.1% solution provides efficient antisepsis. In cases involving contamination with dirt and grease, use a 0.5 or 1% solution.

Obstetrics A 1% aqueous solution effectively cleans and disinfects the patient's skin prior to delivery.

Napkin rash After laundering, rinse napkins thoroughly to remove all soap, and then immerse in a 0.05% solution. Allow to dry without rinsing out the 'Cetavlon'.

Skin diseases A 1% aqueous solution quickly removes ointments, and the scabs and crusts in impetigo, dermatitis, and eczema.

Ear drops For the removal of wax and debris from the ear, use a 1% aqueous solution.

Shampoo In solutions of from 1 to 3%, 'Cetavlon' provides an excellent shampoo for the treatment of seborrhoea of the scalp. After lathering, rinse well to remove the 'Cetavlon'.

'Cetavlon' possesses a wide range of bactericidal activity against both Gram-positive and Gram-negative organisms, including *Ps.pyocyanea*. In concentrations of from 0.5% to 1% 'Cetavlon' also exerts a powerful detergent effect. For bactericidal action only, however, strengths of from 0.05% to 0.1% are adequate.

In the recommended dilutions, 'Cetavlon' has no irritant or harmful effects on the skin, on delicate tissues, or on raw surfaces.

'CETAVLON'

Cetrimide B.P. Trade Mark

ICI IMPERIAL CHEMICAL (PHARMACEUTICALS) LTD.
WILMSLOW, MANCHESTER.
A subsidiary company of Imperial Chemical Industries Ltd.

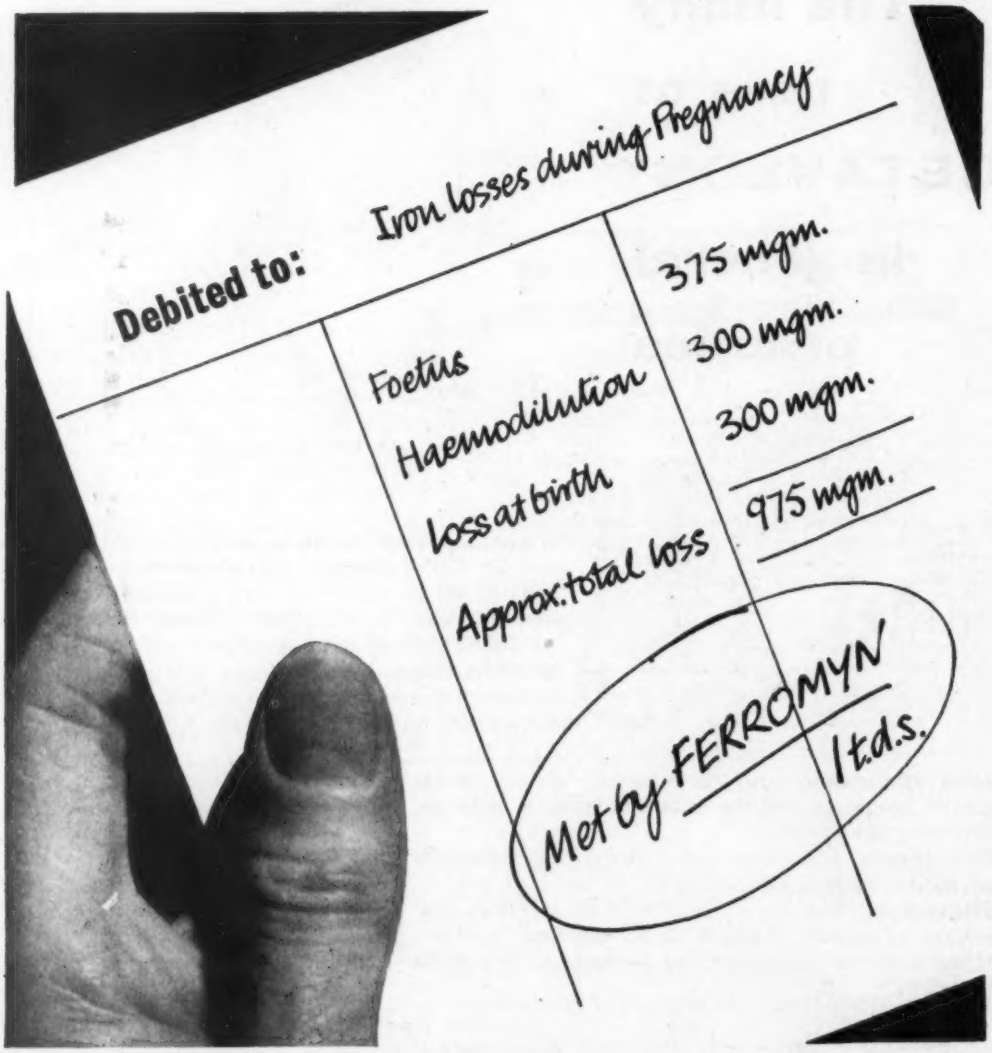
Ph.528

'Cetavlon' Powder
Containers of 50 grammes, 500 grammes and 2 kilogrammes.

'Cetavlon' Tincture 0.5%
Bottles of 100 c.c. and 500 c.c.

'Cetavlon' Concentrate 20%
Bottles of 100 c.c., 500 c.c. and 2 litres.

'Cetavlex' Cream 0.5%
Tubes of 50 grammes and Jars of 500 grammes.



PREGNANCY: meeting the inevitable iron deficiency

Progressive inroads are made on the maternal iron stores during pregnancy. The demand made is greatly increased during the third trimester, and there is little doubt that the exposition of a suitable form of iron is of definite clinical value. FERROMYN meets these important demands because it affords maximum bivalent iron from a minimum of ferrous salt, does not cause alimentary upset, has a high utilisation factor and will maintain a satisfactory haemoglobin level throughout term.

FERROMYN is supplied in four forms:

FERROMYN TABLETS Each tablet contains: *Ferrous Succinate 150mgm.*

ELIXIR FERROMYN Each teaspoonful contains: *Ferrous Succinate 150 mgm.*

FERROMYN 'B' TABLETS Each tablet contains *Ferrous Succinate 150 mgm. Aneurine Hydrochloride 1 mgm. Riboflavin 1 mgm. Nicotinamide 10 mgm.*

ELIXIR FERROMYN 'B' Each teaspoonful contains: *Ferrous Succinate 150 mgm. Aneurine Hydrochloride 1 mgm. Riboflavin 1 mgm. Nicotinamide 10 mgm.*

FERROMYN

CALMIC LIMITED, CREWE. *Phone CREWE 3251-5* **LONDON:** *2 Mansfield St., W.1. Phone LANgham 8038-9*

. . . leadership in oral-iron therapy

F2

RELIEF OF PAIN
HYPERAEMIA
RELAXATION

Response to the percutaneous stimulation

of warmth with

FINALGON OINTMENT

in rheumatic and neuralgic conditions

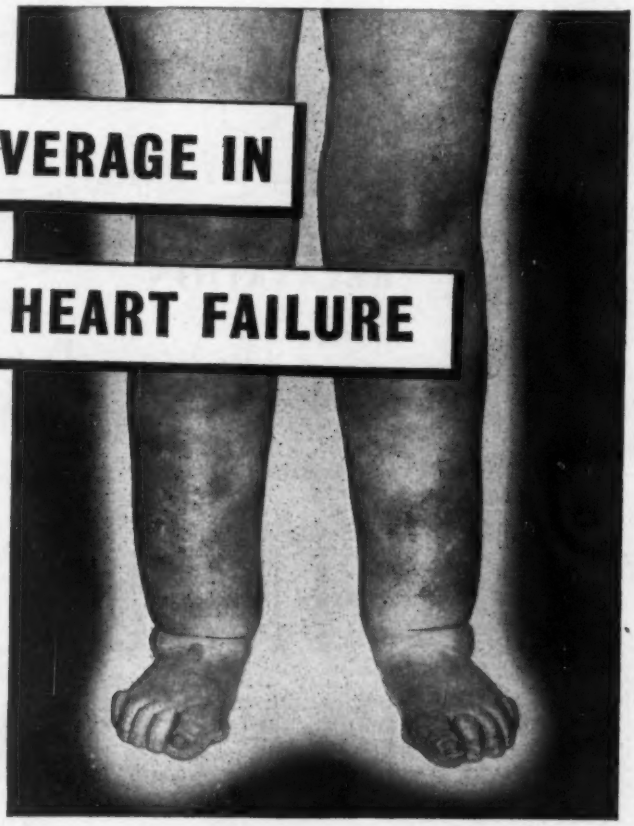
tube of 20 g

COMPOSITION :

Nonylic acid vanillylamide 0.4 % and Nicotinic acid-β-butoxyethyl ester 2.5 % in a suitable ointment base

LEWIS LABORATORIES LTD., LEEDS 9

4-POINT COVERAGE IN CONGESTIVE HEART FAILURE



Cheyne-Stokes Respiration

Cardiac failure

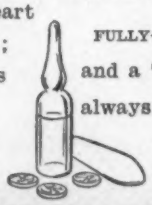
Bronchospasm

Oedema

A CLEAR CASE FOR CARDOPHYLIN. Best known and most widely used of the purine derivatives, Cardophylin is the one drug which combines *four* methods of treating heart failure. It is a respiratory stimulant; it controls bronchospasm; increases coronary flow; and it is a diuretic.

IT IS PRESENTED in tablets, suppositories, and ampoules for intravenous and intramuscular administration.

FULLY-DESCRIPTIVE literature is available and a Technical Information Service is always at your disposal.



A clear case for **Cardophylin**
THEOPHYLLINE–ETHYLENE–DIAMINE Trade Mark

(C.4 Rev. 1)

Manufactured by WHIFFEN & SONS LTD. *and distributed by*

BENGER LABORATORIES LTD · HOLMES CHAPEL · CHESHIRE

BENGER

'ILOTYCIN' BRAND
TRADE MARK

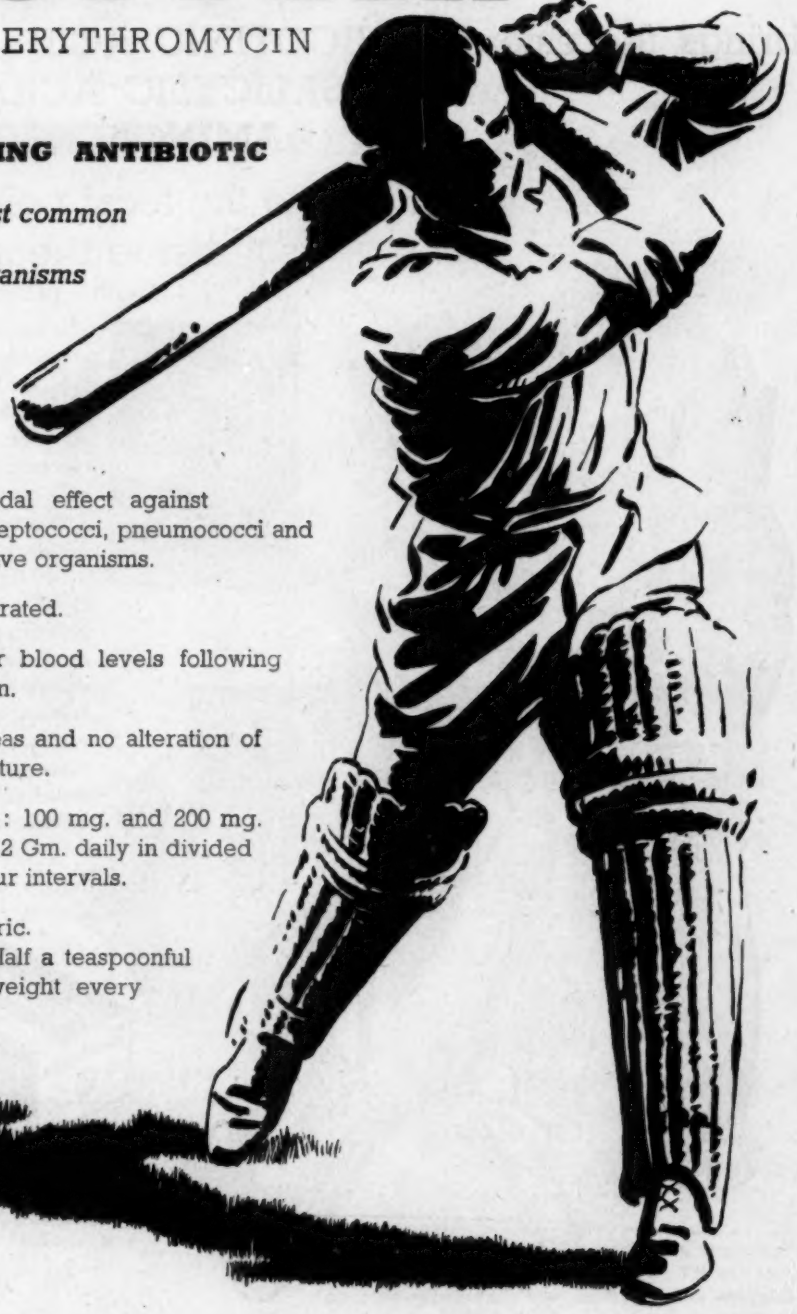
ERYTHROMYCIN

The

HARD HITTING ANTIBIOTIC

against the most common

pathogenic organisms



Prompt bactericidal effect against staphylococci, streptococci, pneumococci and other Gram-positive organisms.

Safe and well tolerated.

Adequate 2-hour blood levels following oral administration.

No toxic diarrhoeas and no alteration of normal blood picture.

'Ilotycin' Tablets: 100 mg. and 200 mg. Average dose: 1.2 Gm. daily in divided doses at 4 to 6 hour intervals.

'Ilotycin' Paediatric.
Average dose: Half a teaspoonful per stone bodyweight every 6 hours.

Lilly
TRADE MARK

ELI LILLY & COMPANY LIMITED · BASINGSTOKE · ENGLAND

Transvasin

brings the esters of NICOTINIC ACID SALICYLIC ACID p-AMINOBENZOIC ACID to the focal point of soft-tissue rheumatism

The esters in Transvasin, a new preparation developed by Hamol S.A., our Swiss associates, readily pass the skin barrier in therapeutic quantities and enable an effective concentration of the drugs to be built up where they are needed. Transvasin not only induces vasodilation of the skin with a superficial erythema, but also brings about a deep hyperaemia of the underlying tissues. It is non-irritant, and can be safely used on delicate skins.

It is now being widely prescribed, with successful clinical results. Since a very small quantity is sufficient for each application, the cost of treatment is extremely low.

Salicylic acid tetrahydrofurfuryl-ester	14%
Nicotinic acid ethyl-ester	2%
Nicotinic acid n-hexyl-ester	2%
p-Aminobenzoic acid ethyl-ester	2%
Water-miscible cream base ad	100%

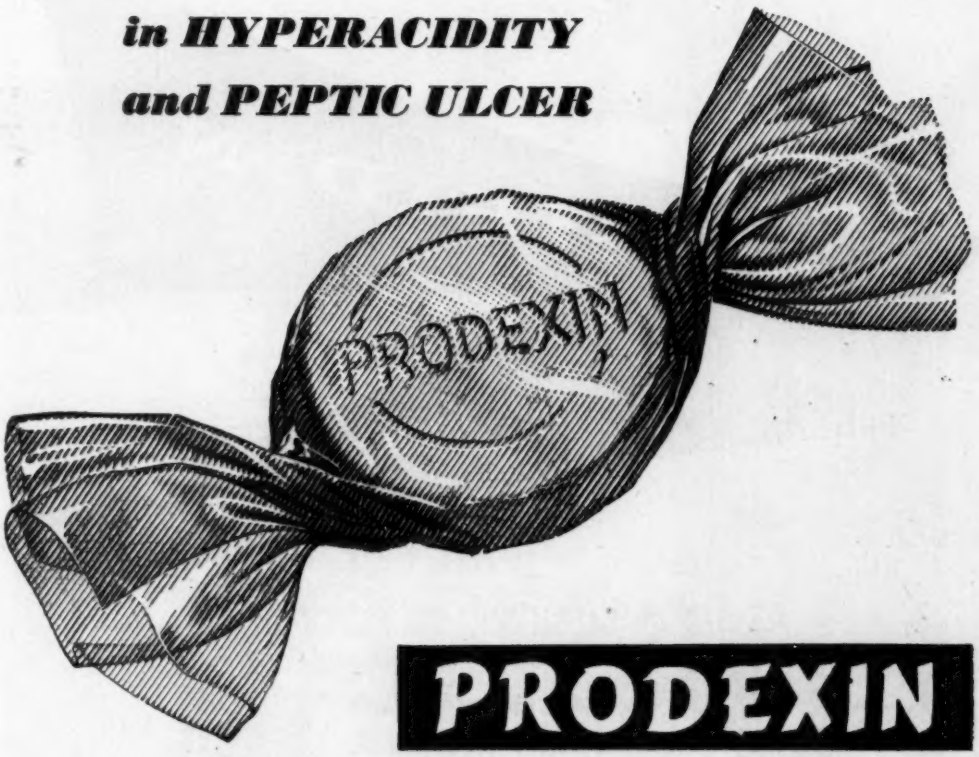
Transvasin is available in 1 oz. tubes, basic price 2/6 plus 7½d P.T., and is not advertised to the public. Samples and literature will be gladly sent on application.

LLOYD-HAMOL LTD., 11 Waterloo Place, London, S.W.1 WHItehall 8684/5/6

Transvasin is the registered trade mark of Lloyd-Hamol Ltd.

For True Buffer Action...

in HYPERACIDITY and PEPTIC ULCER



PRODEXIN

Prodexin has all the attributes of a true buffer, and more besides:

- it keeps gastric acidity down to an equable level (*p*H 3·5 to 4·5).
- it does not alkalise the stomach contents, so that acid rebound cannot occur.
- its effect is consistent and prolonged.
- it does not vary in potency.
- it is pleasant and safe to take and is free from grittiness.

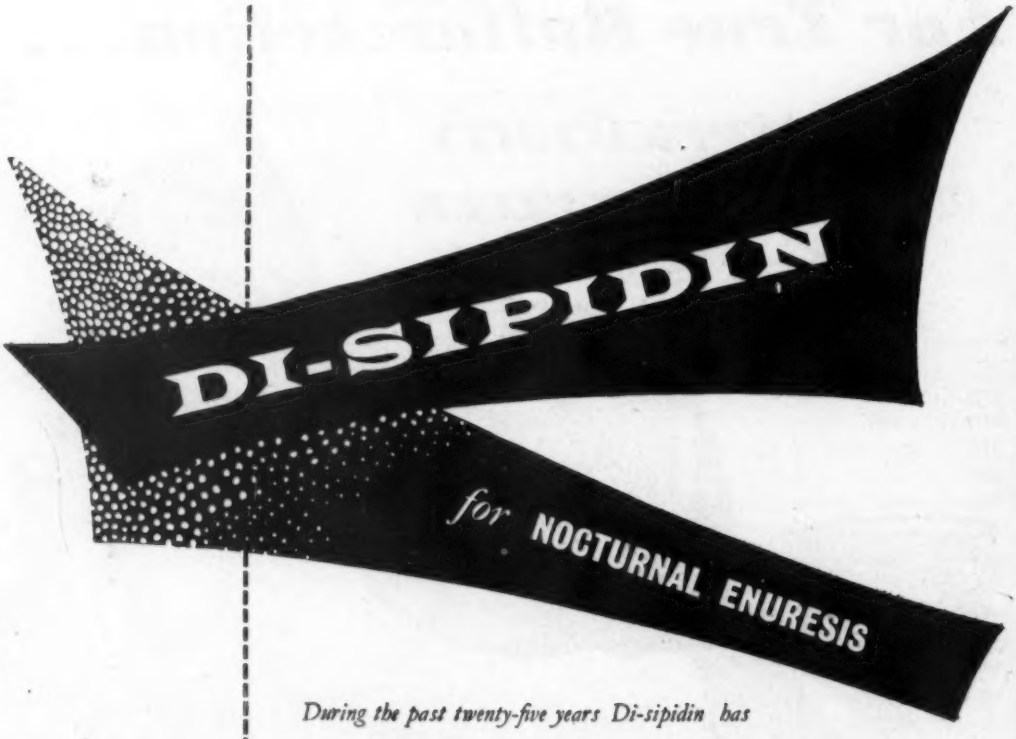
FORMULA

Aluminium glycinate	0·9 gm
Magnesium carbonate	0·1 gm

Reference: *Practitioner*, 173: 46, 1954.

PACKAGES
Cartons of 30 individually wrapped tablets.
Dispensing packs of 240 tablets.

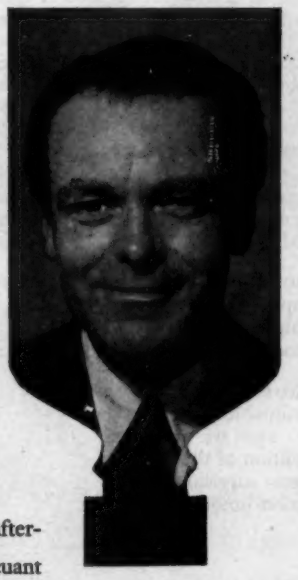
C. L. BENCARD LTD. PARK ROYAL LONDON, N.W.10



*During the past twenty-five years Di-sipidin has become widely recognised in the treatment of diabetes insipidus and now, recently published clinical trials * have pointed to its value in the control of adolescent and adult cases of nocturnal enuresis. Di-sipidin is a standardised preparation of the posterior lobe of the pituitary gland, specially made for use by nasal insufflation.*

* *References:* [1] B.M.J. (1954) II, 1433. [2] (1954) B.M.J. I, 1038. [3] (1953) B.M.J. I, 1194.

PAINES & BYRNE LTD.,
PABYRN LABORATORIES,
GREENFORD, MIDDX.



the 'family' tree . . .

A species of buckthorn tree supplies the 'sacred bark' from which Cascara Evacuant is made. Introduced to medicine by Parke, Davis over 50 years ago it is the ideal laxative for the safe and gentle relief of occasional or chronic constipation . . . for people of every age, in every family. A refined and palatable liquid, non-griping, non-habit forming, with no great tendency to after-constipation, Cascara Evacuant can be used for years without ill-effect. It is a *natural* tonic laxative.

Cascara Evacuant

PARKE-DAVIS

THE IDEAL TONIC LAXATIVE

Parke, Davis & Company Limited, *(inc. U.S.A.)* Hounslow, Middlesex. Tel: Hounslow 2361

291

*L 15

Thromboral

A treatment for Hæmorrhagic ulcers occurring in the alimentary canal

THROMBORAL has been developed for the systemic control of haemorrhagic complications of peptic and duodenal ulcers; bleeding from ruptured oesophageal varices; denuded buccal ulcer and all cases of epigastric distress exhibiting signs of internal haemorrhage.

THROMBORAL contains active THROMBIN in massive doses, the instantaneous haemostatic effect of which is preserved by reduction of the pH of the gastric mucosa. Natural physiological coagulation occurs at the site of bleeding.

THROMBORAL is presented as a complete treatment for oral administration over a 24 hour period.

THROMBORAL can be of inestimable value where the age or physical condition of the patient makes surgical intervention undesirable.

MAW'S Ethical Products also include

NAPHTHIONIN A haemostatic of general action for administration by the parenteral route; used pre-operatively or post-operatively.
Naphthionin does not control haemophiliac bleeding for which Thrombin (Maw) is the haemostatic of choice.

THROMBIN (MAW) A haemostatic for topical use in surgical procedures for the immediate arrest of haemorrhage.

THROMBOPLASTIN (MAW) For reagent use in the determination of the prothrombin time in anticoagulant therapy.

REAZIDE (Cyanacetic Acid Hydrazide) A new hydrazide for specific use in all forms of tuberculosis, particularly in chronic cases. Clinical trials in progress.

HEMATRIX An ointment for the treatment of haemorrhoids, pruritus ani and painful, inflammatory, pruritic and eczematous lesions of the skin in the anal region. Prescribable on E.C.10.

Further information available on request from Dept. AS

Maw's

ETHICAL PRODUCTS

S Maw Son and Sons Limited Barnet England

Physiologic rehabilitation of the constipated bowel

1. Absorption of senna glycosides into blood stream with no effect upon stomach and small intestine

2. Excretion into large bowel—conversion into active principles

3. Activation of large bowel peristalsis via myenteric nerve plexus (Auerbach's)

Neuro-muscular stimulation of the defaecation mechanism with restoration of natural rhythm

SENOKOT (the first standardised preparation of senna containing the total active constituents of the pod) is not a laxative in the usual sense. It restores large bowel sensitivity and reflex evacuation, and the general trend of therapy in the treatment of chronic constipation is the regular *administration of the dose required to give a comfortable motion. As natural rhythm is established, dosage is gradually reduced and finally discontinued.*

Brit. Ency. Med. Pract., Cum. Suppl. 1955 p. 79; Lancet, 1952, **1**, 655; ibid 1953, **1**, 497 and 602; Med. Press, 1954, **231**, 521; ibid 1954, **232**, 127; Pharm. J. 1951, **167**, 115; Practitioner 1953, **170**, 206.

GRANULES: 2 oz., 6 oz. and 2 lb.
TABLETS: 50, 200 and 1,000.
Prescribed under the N.H.S.:
J.C.P. Category 3; inexpensive;
not advertised to the public.

℞ Senokot

STABLE STANDARDISED SENNA

Granules: 1-2 teaspoonfuls. Tablets: 2-4.

WESTMINSTER LABORATORIES LTD., CHALCOT ROAD, LONDON, N.W.1

Sleep... **the healer**

NO single barbiturate combines rapid onset with a duration of action sufficient to ensure a whole night's restful sleep. Carbrital capsules, however, contain pentobarbitone sodium (a quick acting barbiturate) and carbromal (a mild sedative). This, plus the fact that there are little or no after-effects, makes Carbrital ideal for all types of insomnia and for use as a general sedative.

CARBRITAL

for all types of insomnia

available in bottles of 25 and 250 capsules

Parke, Davis & Company, Limited *Inc. U.S.A.* Hounslow, Middx. Tel. Hounslow 2361

94

18

The general indications for Veganin are summarized in the triad PAIN — PYREXIA — EXCITEMENT. Corresponding to these are the three constituents of Veganin — acetylsalicylic acid, phenacetin and codeine; and the three main effects that they produce — analgesia, antipyresis and sedation. In practice, it is as hard to separate one indication from another as it is to consider the action of each constituent individually. They act synergistically on a myriad of symptoms.

PACKING:
Supplied in tubes of 10 and 20 tablets. Also available in bulk packages of 100 and 500 for dispensing only at 5/9d. and 25/- respectively, not subject to P.T. on prescription. Each tablet of 10.4 gr. contains acid acetylsalicyl 250 mg. phenacetin 250 mg. codein phosph. 10 mg

VEGANIN

No Warner preparation has ever been advertised to the public.

WILLIAM R. WARNER & Co. Ltd.,
Power Road, London, W.4.

A new capillary haemostatic

ADRENOXYL

for medical and surgical conditions

Clinically proven to reduce bleeding-time without effect on coagulation or blood pressure, and to have no undesirable side effects

ADRENOXYL, a product of original research, reduces the mean bleeding-time by decreasing the permeability and increasing the contractility and resistance of the capillaries. Its effectiveness in diminishing blood loss has been demonstrated by clinical studies.

ADRENOXYL has no effect on coagulation. It neither increases nor decreases blood pressure.

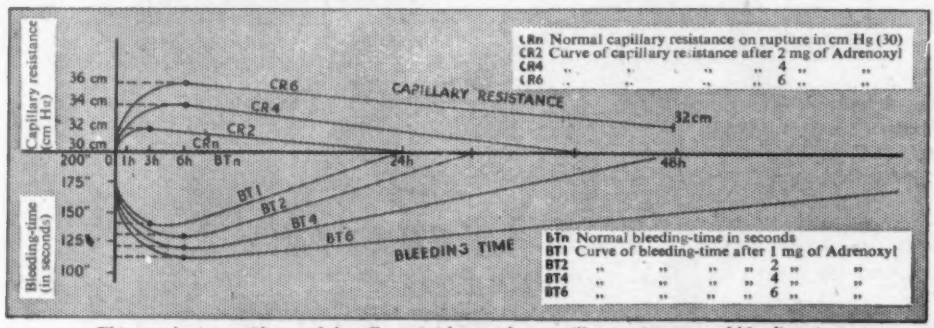
ADRENOXYL is non-toxic, and there are no contra-indications to its use.

ADRENOXYL is indicated in the preventive and curative treatment of all types of capillary bleeding.

ADRENOXYL has been successfully used to diminish capillary bleeding in a wide range of surgical operations, and has proved particularly useful in ear, nose, and throat surgery, ophthalmic surgery, thoracic surgery, gastro-intestinal surgery, plastic surgery and urogenital surgery. It has also been used successfully in many medical conditions associated with capillary haemorrhage or where capillary fragility is a feature.

ADRENOXYL may be administered by mouth or by subcutaneous or intramuscular injection. The oral form is for routine treatment, though when rapid action is desired the intramuscular route is recommended.

ADRENOXYL is now available in boxes of 6 or 50 ampoules: tubes of 25 tablets or bottles of 500 tablets.



This graph gives evidence of the effect of Adrenoxyl on capillary resistance and bleeding-time

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Ars. Medici 1948, 3, 57

L'Adrénoxyl comme hémostatique en otorhinolaryngologie
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Recherches cliniques sur l'action hémostatique, dynamogène et vitaminique P de l'adrénochrome (Adrénoxyl).
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Zur Frage der Blutungsprophylaxe bei Bulbuseröffnenden Operationen.
Schweiz. Med. Woch. 1952, No. 17, 484

La semicarbazone de l'adrénochrome: hémostatique biologique à action tissulaire.
Rev. Stomat. 1947, 48, 616

Hémostase on chirurgie plastique, emploi de la monosemicarbazone de l'adrénochrome.
Rev. L.O.R. 1948, 380.

Literature and samples on request.

HORLICKS LIMITED
Pharmaceutical Division, Slough, Bucks.

RAUWILOID

a purified and biologically tested extract of . . . . RAUWOLFIA SERPENTINA

RAUWILOID is not the crude Rauwolfia root. Rauwiloid represents the total hypotensive activity of pure whole Rauwolfia serpentina root, freed from inert matter and the undesirable side-effects of the yohimbine type alkaloids.

RAUWILOID is not merely a single alkaloid of Rauwolfia. Rauwiloid provides the balanced action of the several potent alkaloids in Rauwolfia.

RAUWILOID contains besides reserpine other active alkaloids such as Rescinnamine* reported to be equally hypotensive but less sedative than reserpine.

RIKER

indications

Rauwiloid presents Rauwolfia in its optimal form for the treatment of essential hypertension. In severe, malignant cases its greatest value lies in its ability to ameliorate the side-effects of the more potent anti-hypertensives.

Dosage is simple—two tablets nightly.

* *References:*

Proc. Soc. exp. Biol., N.Y. (1954) **86**: 120.
Amer. Chem. Soc. (1954) **76**: 2843.

Detailed literature will be gladly sent on request.

'RAUWILOID' is a Registered Trade Mark. Regd. Users:

RIKER LABORATORIES LIMITED

LOUGHBOROUGH LEICS. ENGLAND

To fight infection
to fortify body defences

Terramycin* SF*

BRAND OF OXYTETRACYCLINE WITH VITAMINS

TERRAMYCIN S.F. capsules provide, in addition to the average daily adult dose of each antibiotic (1.0 G.), the specific therapeutic dosage of water soluble vitamins as well as vitamin K:

ASCORBIC ACID 300 mg.
THIAMINE MONONITRATE 10 mg.
RIBOFLAVINE 10 mg. · NICOTINAMIDE 100 mg.
MENAPHTHONE (*vitamin K analogue*) 2 mg.

By administering the essential anti-stress vitamin supplement combined with Terramycin in a single capsule, the physician is assured that the patient's vitamin requirements have been met in an important respect.

Pfizer WORLD'S LARGEST PRODUCER OF ANTIBIOTICS

PFIZER LTD · FOLKESTONE · KENT · TEL: FOLKESTONE 51771 • *Trade Mark Chas. Pfizer & Co., Inc.*

Roche progress 1955

FIRST 'ARFONAD' for safer hypotensive surgery

THEN 'MESTINON' a new cholinergic compound

NOW

'NOLUDAR'

Trade Mark Brand

a new safe sedative and mild hypnotic

released after extensive clinical trials

Chemistry	2, 4-dioxo-3, 3-diethyl-5-methyl piperidine. Different in constitution from the barbiturates and the straight chain ureides.	
Properties	Wide safety margin — does not cause tolerance or habituation. No undesirable effects on respiration, circulation or digestion.	
	Rapid in onset	½ to 1 hour
	Brief effect	about 6 hours
	No hangover	
Indications	In hypnotic doses	for the treatment of insomnia
	In sedative doses	for nervousness, anxiety states, hypertension etc.

Packings
'Noludar' tablets: 200 mg. in containers of 10, 100, and 500

ROCHE PRODUCTS LIMITED, 15 MANCHESTER SQUARE, LONDON, W.1

for the

treatment or prophylaxis

of

Labyrinthine Disturbances

The value of " Dramamine " in the control of all forms of motion sickness is well established. More than this, however, it is now recognised that " Dramamine " is most effective in the control of other labyrinthine disturbances, so that it is indicated in the treatment or prophylaxis of any condition of abnormal stimuli of the tissues including end organs (gastro-intestinal tract, eyes) and their neural pathways to the labyrinth. Side-effects of " Dramamine " are so slight that dosage may be continued over long periods if necessary.

SEARLE

Dramamine

Brand of dimenhydrinate

Thus conditions in which " Dramamine " has been most effective include vertigo due to hypertension, fenestration procedures and labyrinthitis ; Menière's syndrome, irradiation sickness, and in the symptomatic control of nausea and vomiting due to pregnancy, electro-convulsive therapy, narcotisation and certain drugs (antibiotics, etc.).

" Dramamine " may be administered orally, or rectally. It is supplied as 50 mg. tablets, in bottles of 12, 36 and 1,000 and in cartons (10 strips of 10 tablets).

Literature on request

*REGISTERED TRADE MARK

SEARLE

Ethical Pharmaceuticals since 1888

G.D. SEARLE & CO., LTD.

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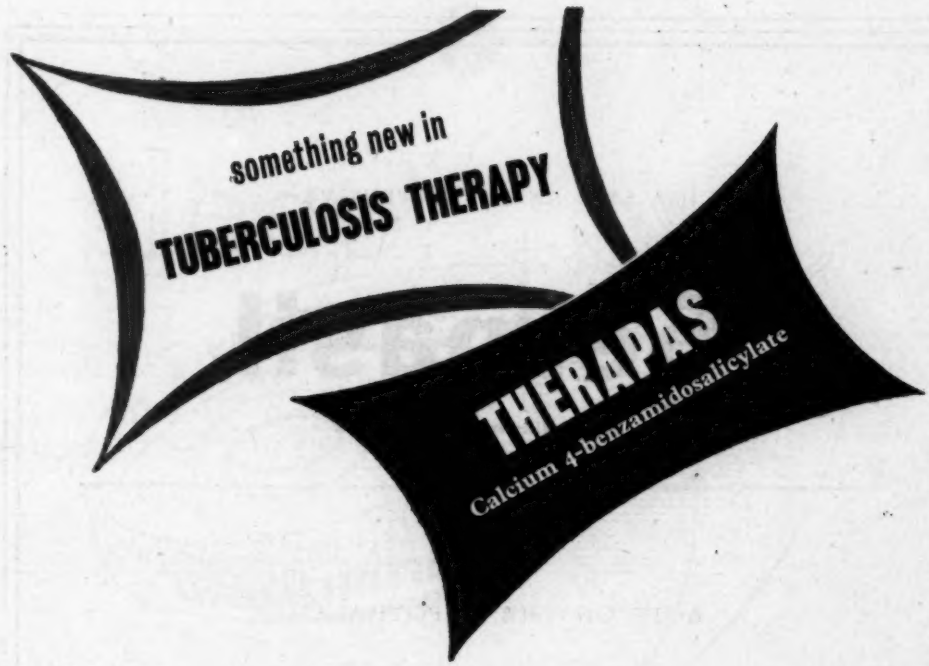

THERAPAS is a modified form of P.A.S. that is more than an alternative.

P.A.S. was originally combined with isoniazid or streptomycin in order to delay the emergence of resistant strains of *M. tuberculosis*. **Therapas does this, too.** It is as effective as P.A.S. for this purpose. Similar in structure to P.A.S., it is converted to it in the body (1). P.A.S. combined with isoniazid or streptomycin is effective against *M. tuberculosis*. **Therapas is more so.** It does not merely act as a foil, but is reported to give satisfactory clinical and radiological results in pulmonary tuberculosis even when given alone (2). In combined therapy it is highly effective (3).

P.A.S., unfortunately, is poorly tolerated. Many patients would welcome an alternative. **Therapas is not so.** It has a slightly sweet, not unpleasant taste. Patients who dislike P.A.S. might well be tried on **Therapas.**

1 *J. Pharmacy & Pharmacol.*, 1953, 5, 849
2 *Schweiz. med. Wschr.*, 1955, 85, 222
3 *Tubercle* 1955, 36, 209

dosage | **Therapas** may be administered in daily doses of 14 G.

availability | Individual packets of 3.5 G. in boxes of 100 packets.
1.0 G. cachets in containers of 100 and 500.
Bulk Powder in containers of 100 G. and 500 G.

S&N *Further information and prices from* SMITH & NEPHEW LIMITED, WELWYN GARDEN CITY, HERTS.

A SAFE ANTIHYPERTENSIVE

Serpasil

pure crystalline reserpine from Rauwolfia

ACTS ON THE HYPOTHALAMUS

REDUCING MENTAL TENSION AND STRESS

IN HYPERTENSION

AND IN ANXIETY STATES

Tablets of 0.1 mg., 0.25 mg. and 1 mg.

Ampoules of 1 mg. and 2.5 mg.

Serpasil elixir now available

Bottles of 100 c.cm.

CIBA

'Serpasil' is a registered trade mark. Reg. usa

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Telephone Horsham 1234. Telegrams Cibalabs, Horsham.

4/5

sleep

TO A TIMETABLE

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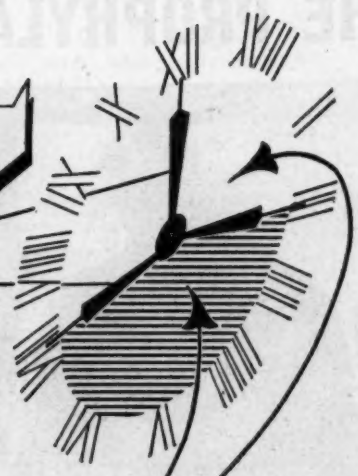

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EARLY AMBULATION

WITH SPECIAL REFERENCE TO HERNIORRHAPHY AS AN OUTPATIENT PROCEDURE *

ERIC L. FARQUHARSON
M.D., F.R.C.S.E., F.R.C.S.
SURGEON, ROYAL INFIRMARY OF EDINBURGH

ADVOCATED by Emil Reis of Chicago, before the end of last century (Reis 1899), early ambulation has gained a measure of acceptance in that the period of bed rest after operation has been progressively shortened. The shortening has been especially evident in recent years, for no longer ago than during the late war an Army order decreed that after inguinal herniorrhaphy all patients must be kept in bed for 21 days.

"Early" ambulation is a relative term and open to many interpretations, but those who support the method most warmly insist that to obtain full benefits the patient must be ambulant—i.e., *walking*—not 5 or 6 days after the operation, but if possible within 24 hours, and certainly within 3 days (Palumbo et al. 1952, 1953). Reports on the results of such after-treatment suggest that nothing but benefit accrues. Most surgeons, however, while accepting in principle the undoubted benefits of early ambulation, feel that it is safer, or kinder to the patient, to pursue a middle course: they keep the patient in bed for 5 or 6 days after operation, to see whether complications develop, and then, if he does not feel inclined to get up, he is given a day or two longer.

Wound Healing

John Hunter described rest as the most powerful aid which the surgeon can bring to disordered tissue, and Hugh Owen Thomas stated that such rest must be enforced, uninterrupted, and prolonged. It is certainly open to question, however, whether the healing of an operation wound really does require such rest, complete and uninterrupted. Even those who do not believe in early ambulation allow their laparotomy patients to move about freely in bed, and are careful to prescribe deep breathing and leg exercises, which in themselves promote fairly intense activity of the abdominal muscles. To allow the patient to rise with assistance from his bed, and to walk across the ward, imposes no greater strain on his wound: indeed, it is probable that the most severe strains of all are caused by trying to cough effectively while in bed and by the use of the bedpan. It is far less distressing—even a few hours after an operation—to cough in the standing position and to walk to the toilet.

Whatever the patient may fear, wounds do not disrupt as the result of early ambulation. When a wound does disrupt, the patient, with rare exceptions, is lying in bed, and has usually been confined to bed since operation for 7 to 10 days (Jenkins 1937). The incidence of hæmatoma formation, wound sepsis, and incisional hernia does not seem to be increased by early ambulation. Indeed, there is evidence that wound healing is actually accelerated by a reasonable degree of activity (Blodgett and Beattie 1946, Burch and Bradley 1947). The same may well apply to the healing of incisions and anastomoses in the gut. Early ambulation imposes no discernible strain on an intestinal suture line or anastomosis. By far the greatest strain which such a suture line has to withstand is that caused by distension of the gut, and early ambulation, by promoting the return of normal gastro-intestinal motility, is the best method of preventing this complication.

The Vital Functions

Those complications which constitute the morbidity and mortality after operation are usually remote from the actual wound. They affect rather the muscular structures involved in respiration, circulation, and digestion. Normal functioning of these systems is, of course, reflexly depressed not only by surgical trauma but also by the concomitant factors of fear and pain. In favourable cases, and provided that Nature is allowed to have her way, such depression is comparatively short-lived. An animal which is injured, or which has been operated on, moves about actively as soon as—even with discomfort—it is able to do so. So also do patients of primitive races—as many surgeons discovered to their surprise during the late war, when their duties took them to the far places of the Earth. These patients, who were uninhibited by fear of possible consequences, and whose language we fortunately did not understand sufficiently to instil such fear into them, usually arose from their beds within a few hours of operation. By contrast the patient who is the product of modern civilisation tends to remain inactive in bed because of the traditional fears instilled into him by nurses and surgeons.

As long as the patient is confined to bed, respiration remains shallow and the vital capacity is reduced. Coughing is difficult, so that mucus may collect and atelectasis ensue. Churchill and McNeil (1927) showed that, when patients are confined to bed after upper abdominal operations, the vital capacity falls progressively until the 4th or 5th day, and that return to normal is delayed for 15 days or longer. If, however, the patient becomes ambulant within 24 hours, lowering of the diaphragm and muscular activity combine to promote full aeration of the lungs; the fall in vital capacity is immediately arrested and a return to the preoperative level can be expected by about the 5th day. As a result, the incidence of respiratory complications is greatly reduced.

Rest in bed, which causes considerable slowing of the venous blood-flow, favours the onset of thrombosis or embolism in the pulmonary circulation—a complication which, in spite of all the recent advances in postoperative care, remains the most frequent and unpredictable cause of death. Stasis cannot, of course, be the only factor in the production of thrombosis, but it is certainly one of the most important.

Most authorities hold that infarction of the lungs is secondary to thrombosis of the veins of the lower limbs or areas drained by the inferior vena cava. By injecting radioactive isotopes Wright (1951) has shown that, in patients confined continuously to bed, the venous flow in arms and legs becomes progressively slower until the 15th day, whereas in ambulant patients it actually increases, reaching a maximum 10 to 12 days after operation.

The evidence that infarction of the lungs is usually secondary to thrombosis in the leg veins, is, however, by no means conclusive. About 40% of cases of lung infarction show no clinical evidence of thrombosis elsewhere, and none may be found at autopsy. Dew (1953) has suggested that, quite as often, intravascular clotting in the lungs occurs as a primary phenomenon, although it may be associated with thrombosis elsewhere. He points out that the clot is often found at autopsy to fill almost all the radicles of the pulmonary artery, and that no embolus could be preformed so perfectly as to occlude all these vessels in this way. In normal people the circulation in the pulmonary tree has a very low pressure—30–40 mm. Hg. After an abdominal operation it has a still lower pressure, and may be very sluggish indeed, especially if the patient remains inactive in bed with shallow breathing and a quiet raised diaphragm.

Since we must believe that the circulation throughout the body is improved by early ambulation, it is dis-

* From a Honyman Gillespie lecture, entitled Early Ambulation and its Contribution to Surgery, delivered in the University of Edinburgh on May 5, 1955.

concerting that many reports from clinics where this has been employed as routine during the past decade fail to show any significant decrease in the incidence of thrombosis (de Bakey 1954). But this can be explained, in part at least, by the different interpretations of the term "early." Palumbo et al. (1952, 1953) have shown that the incidence of thrombosis is indeed considerably reduced by early ambulation—but only if this is put into effect within 48 hours of operation. If we accept their evidence, we must suppose that the changes in the blood or in the vessel walls which initiate thrombosis appear within this time: some form of prethrombotic state may be established, to await the action of a second factor (also unknown) in determining the actual occurrence of thrombosis. That really *early* ambulation may prevent thrombosis has been borne out by my own experience of inguinal herniorrhaphy performed as an outpatient procedure, for in 485 patients so treated there have been no thrombotic complications.

Patient's Morale

The effect of early ambulation on the patient's morale is incalculable. When told on the evening of operation, or on the following day, that he can get up, he is surprised and often incredulous—but he is pleasurably surprised. From being fearful of the consequences of operation, he at once becomes confident, and realises that he is no longer an invalid. He is happy to take over the management of his own personal hygiene—not to suffer the indignity and discomfort of being catheterised, or of using a bedpan. He quickly regains his strength, because he has had so little time in which to lose it.

Discharge from Hospital

Many of those who are most enthusiastic about early ambulation insist, however, that it should not be made a pretext for too early discharge of the patient from hospital. The reason for this advice is not clear, but it may be ascribed to the fact that tradition dies hard. It has been stated in an editorial in the *British Medical Journal* (1948) that any surgeon who allows a patient to leave hospital within 14 days of an abdominal operation would be in a difficult position should complications develop. Are we to admit then, rather shamefacedly, that our main reason for keeping our ambulant patients in hospital is to protect ourselves against possible litigation, and, in the light of our long waiting-lists, is this attitude defensible?

If the patient can move about the ward free from pain, if his temperature and pulse chart are normal, if his bowels have moved naturally, if there are no special dietary restrictions, and if his wound does not require to be looked at for several days—is there then any real reason why, if his home conditions are suitable, he should not be allowed to leave hospital? Fear that early activity will delay wound healing or promote complications appears, on the evidence, to be quite unfounded. Should such complications develop, it should be possible to maintain that they were in no way due to, or aggravated by, the patient's discharge from hospital, and to reject in good faith any accusations of negligence.

There are several strong arguments in favour of early discharge from hospital of the ambulant patient, for even the best equipped of our modern hospitals make little provision for his needs (Goodall 1951). There are no comfortable armchairs or similar amenities, and washing facilities are often sadly limited. Patients who are theoretically ambulant, but who all too often are deprived of their clothes, tend to spend most of their time in bed, finding this the most comfortable place, and the one where they are least in the way of the busy ward staff. How much more comfortable they might be, and how much more speedy their recovery if, their home conditions being suitable, they were at their own firesides.

Most of the evidence which has been adduced in favour of early ambulation has been concerned only with its effect on the individual patient, but possibly even more important are the benefits which it can confer on the community as a whole. If it is combined with early discharge of the patient from hospital—and that, I think, should be a corollary of early ambulation—it leaves beds free for those who are awaiting admission.

The argument that early ambulation involves a measure of cruelty to the patient is surely little more than a last-ditch defence of its opponents. In criticism of Leithauser (1946), who has done so much to promote the method during recent years, *The Lancet* (1951) wrote that "not merely did he push patients out of bed as soon as they were conscious; he pushed them out of hospital as soon as they could totter!" Agreeing, as I do, with much of Leithauser's teaching, I feel that this is manifestly unjust. It is true that the patient may be unwilling, or even mildly rebellious, when he is assisted out of bed on the evening of the day of operation, but on the next day he is usually anxious himself to get up, for he appreciates the privileges which he can then enjoy. As soon as he realises that he can walk without discomfort he is anxious to continue and to extend his activities. If, after a further few days, we offer to let him go home, usually with his stitches still in situ, he may look at first incredulous, but his face lights up with pleasure and he accepts with alacrity. It is certain, I think, that he does not accuse us of cruelty; indeed, he would have no possible justification for doing so. He is not urged or requested to leave hospital; he is rather allowed to do so if this is his own wish, and—an important proviso—if we consider his home conditions to be suitable.

If, however, we are to be accused of cruelty in discharging our ambulant patients from hospital, this is nothing to the cruelty of our long waiting-lists. These waiting-lists throughout the country now assume frightening proportions. In December, 1952 (the last date for which such figures are available), there were in England and Wales 447,000 people (nearly half a million) awaiting admission to hospital, and for them a total of only 76,000 beds had been allocated. In the South Eastern region of Scotland alone, there were at the end of last year over 13,000 persons awaiting hospital admission; for the available total of less than 800 general surgical beds there was a waiting-list of over 3000. Owing to the shortage of hospital accommodation and of nursing staff, there is no discernible solution to this problem. If, however, by early ambulation and by discharging our patients home on the 5th or 6th day instead of the 15th or 16th day we can increase the bed turnover, we are at least helping to improve on present conditions.

Inguinal Herniorrhaphy as an Outpatient Procedure

Rightly and properly we give precedence on our waiting-lists to those whose diseases are progressive or endanger life. The unfortunate man with an inguinal hernia can plead no such cause, and his name is liable to remain indefinitely on the list, because there are always others whose claims seem to be more urgent. Yet many of these hernia patients—usually young men with families to support, working under difficulties or perhaps prevented by their disability from working at all—are socially and economically more urgent cases than the old people with their advanced carcinomata, which so often, when the final count is made, we are unable to cure.

Some 5 years ago, prompted by these thoughts, and by reports in the literature (Blodgett and Beattie 1946, 1947, Burch and Bradley 1947) that the recurrence-rate after inguinal herniorrhaphy is in no way affected by early ambulation, I began to operate on patients for inguinal hernia as an outpatient procedure.

485 patients suffering from inguinal hernia have now been treated in this way. Had all been admitted to hospital for the customary 10 days, they would have

filled a 28-bedded ward continuously for nearly 6 months. Their total period of hospitalisation would have amounted to 4850 bed-days, which at the Royal Infirmary of Edinburgh would have cost the National Health Service approximately £7500—more than this, I understand, in many English hospitals. We cannot, of course, claim that we have saved that sum for the service, for the beds have been filled by other patients; but at least many of these other patients owe the fact of their admission to our method of outpatient herniorrhaphy, which has left the beds free. Also, we have kept our hernia patients waiting only a few days or a few weeks for their operation, instead of many months.

The operation has been carried out in all cases under local anæsthesia; for, if we had had to keep beds vacant for patients to recover from a general anæsthetic, many of the essential advantages of the method would have been lost. In our experience local anæsthesia has proved entirely satisfactory—even in the youngest patients of our series (which includes 2 boys aged 12). In the early cases we had an anæsthetist standing by, but soon gave this up as unnecessary, for in none of our 485 cases did we need to have recourse to a general anæsthetic.

As a rule the patient is little disturbed by the operation. He climbs down from the operating-table, walks out of the theatre, dresses in his lounge suit, and then walks out to the ambulance in which he is taken home. Our aim is to get him back to his own bed while the local anæsthetic is still effective. In this, I am afraid, we are not always entirely successful, but we have had no complaints of serious discomfort. It has had to be impressed upon the ambulance-drivers, however, that, although the patient may have walked into the ambulance, he should, as a rule (unless he himself wishes to walk) be carried out, since by that time the effect of the local anæsthetic may have worn off. He is told that he will probably want to have 3 or 4 days in bed, but that he should get up for toilet purposes. He is asked to return to hospital (and usually does so without benefit of the ambulance service) in 8 or 9 days for removal of his stitches.

In general, patients are selected for this method of treatment according to their home conditions rather than according to the size or duration of the hernia. It is obvious that patients who are in lodgings, or who live with their family in a single room, should not be treated in this way; nor should those whose herniæ are very large or irreducible. At first we chose only younger men with oblique herniæ, which seemed to need no reconstructive repair; as we have become more confident, however, we have operated on all kinds of inguinal hernia—indirect, direct, and recurrent—by this method. Local anæsthesia has been found adequate for any type of reconstructive repair which we chose to undertake. Any discomfort which the patients may experience is due to dragging on the peritoneum while the neck of the sac is being cleared.

The ages of our patients have ranged from 12 to 83 years. Advanced age itself is no bar to the outpatient operation; indeed I think that it is a strong indication, since old people are especially subject to the complications induced by confinement to bed, and are more upset by departures from their normal routine. The old gentleman who is returned to his own bed after operation, and who can walk to his own lavatory, seldom develops retention of urine. This complication has not occurred at all in our series, although 16 of our patients were over 70, and 3 over 80 years of age.

Having ascertained that home conditions are suitable, we explain to the patient just what the operation entails, and satisfy ourselves of his willingness to be treated in this way. We write to his family doctor and ask him to coöperate in the treatment by visiting the patient for the first 2 or 3 days after operation. We, in turn, promise that we will admit the patient to hospital immediately should any complications arise.

When the patient leaves by ambulance immediately after operation, we give him another letter to his doctor with instructions that it must be delivered that day. As a reminder of his promise to coöperate by visiting the patient, we suggest to the doctor that the patient will probably appreciate a sedative for the first 2 nights; we renew our undertaking to admit him at once if there are any anxieties about his progress.

We are most grateful to the doctors—the vast majority of those approached—who have coöperated with us and continue to send us cases for the same treatment. None of them has complained about night calls, or of any other pressing demands made by these patients.

The number of patients whom we have had to admit to hospital because of complications has been surprisingly small—only 11 in the total number of 485. Most of these admissions were necessitated by oozing from the wound or hæmatoma formation—complications which we have, I think, learnt to avoid by more careful attention to hæmostasis, for in the last 200 cases only 1 such admission has been required.

Insufficient time has as yet elapsed for us to assess the long-term results of this method of outpatient herniorrhaphy. We have, of course, had some recurrences, but, if one accepts the generally held view that herniæ which are going to recur usually do so within a year, our results seem to be at least as good as many of those claimed for cases treated by orthodox methods. It has been gratifying to find that most of the patients with recurrence, instead of attributing such to this new form of treatment, have specifically asked to be operated on again in the same way. Indeed, the most interesting feature of the method has been its acceptance by the patients themselves. They do not, as one might think, submit themselves to it rather unwillingly, simply as a means of avoiding the long delay on the waiting-list for admission; they seem actually to prefer it. A few patients, who understandably disliked the feelings of apprehension associated with an operation under local anæsthesia, would rather have been "put to sleep," but nearly all sincerely appreciated the privilege of being allowed to return to their own homes immediately after the operation.

Conclusions

Early ambulation has no deleterious effects on wound healing. It reduces the incidence of complications, uplifts the patient's morale, and in every way accelerates his recovery. When combined, in suitable cases, with early discharge of the patient from hospital, it leaves beds free for others who are awaiting admission.

Reference has been made to inguinal herniorrhaphy carried out as an outpatient procedure. This treatment has been employed in 485 patients, whose home conditions were suitable, and whose family doctors coöperated by supervising convalescence. The immediate results have been most satisfactory; the method has been found to involve no undue hardship, and the majority of patients have been sincerely appreciative. It is intended to present a follow-up report on these cases at a later date.

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ILIO-INGUINAL BLOCK DISSECTION
WITH PRIMARY HEALING

E. STANLEY LEE
M.S. Lond., F.R.C.S.
SURGEON, WESTMINSTER HOSPITAL, LONDON

BLOCK lymph-node dissection of the axilla and of the neck have long ago become standard and accepted operations, but inguinal dissection still remains something of a bugbear, vexatious to the surgeon and a sore affliction to the patient.

The textbook radical operation of today (Shaw 1954, Te Linde 1953) is based on that of Basset (1912) and is haunted by the complications of skin necrosis and lymph fistula, with healing by granulation delayed over many weeks. The more thorough the operation the more troublesome is healing likely to be; and the patient is all too often left with more or less severe lymphœdema, which may be crippling.

Way (1951), who has a very large experience of groin dissections for carcinoma of the vulva, considers that lymphœdema occurs "in almost all cases." Believing that sepsis and delayed healing were inevitable, he for a time advocated packing the inguinal wounds without suture. Later, however, he found that by excising devitalised skin he could get half the wounds to heal by first intention. Most surgeons, regrettably, and unlike Way, have lowered their sights, restricting the operation for the sake of quick healing. Te Linde (1953), for example, describes and illustrates a dissection made through a three-inch incision and deferred until two weeks after ablation of the primary tumour.

The chief cause of delayed healing is sloughing of the skin on the femoral side of the wound because it has to be very thinly dissected from the underlying fat and nodes. A contributory cause is the "tenting" of the wound over the hollow groin, leaving a cavity which fills with lymph. This clots, adding to the resultant fibrosis. A drain in the groin is, too, a dirty affair; and, if sepsis is introduced, the density of the ultimate scar is likely to be even greater. The relation of fibrosis to lymphœdema is important. All surgeons agree that, after radical mastectomy, serous collections and wound infections, leading to delayed healing, are powerful factors in producing a swollen arm; and it is reasonable to suppose that, if these same factors can be avoided in dissection of the groin, the risk of œdema of the leg will be reduced.

Such considerations have led me to the development, during the past two years or so, of an operation which largely overcomes these difficulties. Though fully radical, it leads to primary healing without œdema in the great majority of cases. Its cardinal points are:

(1) Excision of the devitalised femoral skin.

(2) Primary closure, without tension, by mobilising an abdominal flap.

(3) "Pin-down" stitch and pressure dressings to ensure close adherence of flaps.

(4) Avoidance of all drains.

The operation, though a little tedious, has proved so satisfactory that I have thought it worth publishing, even though it has so far been performed only ten or twelve times.

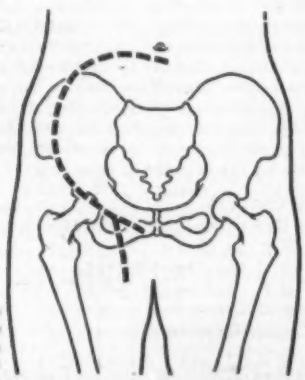

Fig. 1—Skin incision. Vertical femoral limb divides skin only; remainder is carried down to muscle.

The Operation

Incision

The incision is C-shaped (fig. 1) and may be first marked out with a skin pencil. It begins at or just below the umbilicus and extends in a uniform curve out into the flank and down across the anterior-superior iliac spine; thence it curves just below the inguinal ligament and up again to the pubic tubercle. It should not be skimped, because the longer this incision the easier the final wound closure will be. Some modification may be needed if nodes are adherent to the skin. Only the inguinal part of the incision need be made at this stage.

Inguinal Dissection

The inguinal portion of the incision is made through skin only, and is supplemented by a short vertical cut 5–8 cm. long over the line of the femoral blood-vessels. The two

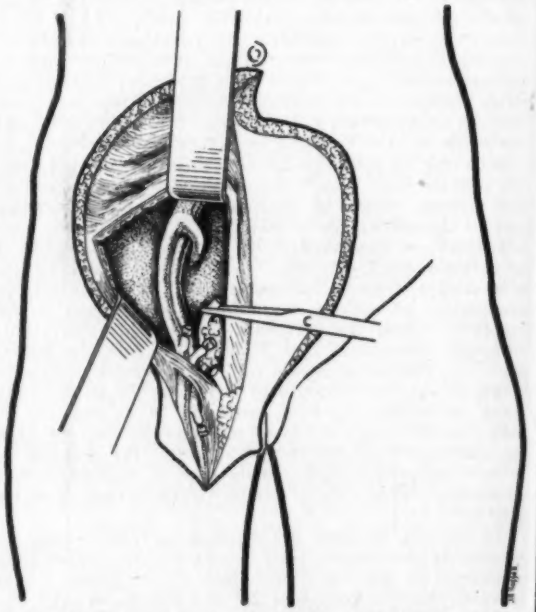

Fig. 2—Dissection completed. Round ligament divided; iliac vessels displayed by retraction and lifting of abdominal wall, and unopened peritoneum.

femoral flaps resulting are then dissected up very thinly, until a semicircular zone of fascia has been outlined. This zone, which contains the nodes, is based above on the inguinal ligament, extends from iliac spine to pubic tubercle, and reaches down into the thigh along the vessels for 7 or 8 cm. It is now isolated by diathermy division of the fat and deep fascia at its periphery, until the muscle is exposed all round. Below, the iliacus, psoas, and pectineus muscles are seen; and above, the aponeurosis of the external oblique is exposed along the line of the inguinal canal. At the lowest point of the dissection the saphenous vein is identified, tied, and divided.

The fatty block thus isolated and including the deep fascia is now dissected up off the muscles, concentrically inwards towards the femoral canal and the femoral vessels. All fatty tissue and nodes are withdrawn from the femoral canal, and the dissection is continued until the specimen remains attached only to the femoral vein by the termination of the saphenous vein, which is now tied and divided, the specimen being removed. The wide exposure of the muscles in this way, bare of fascia, helps to ensure rapid adherence of the flaps with, it is hoped, opening up of new lymph pathways.

Abdominal Flap

The femoral wound is now covered with a warm towel and the outlined incision completed, being carried down to the abdominal muscles. The C-shaped flap is freed towards the midline, gauze dissection being used to separate the fat from the muscles, until the irregular line of the anterior perforating vessels is reached, usually about 3–5 cm. from the

midline. These branches of the superior-inferior epigastric arcade form the main blood-supply to the flap and should be preserved. The flap is now rolled back on to the opposite side of the abdomen and covered with warm towels, leaving the muscles and aponeuroses of the abdominal wall cleanly exposed.

Iliac Dissection

The external oblique muscle and its aponeurosis are split about 2–3 cm. above, and parallel with, the inguinal ligament. The split starts above the pubic tubercle, opens up the inguinal canal, and extends out beyond the inguinal ligament over the iliac crest to a total length of 15–20 cm., according to the patient's build. The internal oblique and transversus muscles are divided in the line of the incision; bleeding is much reduced if this is done with the diathermy. The spermatic cord is freed, and may conveniently be held aside with a rubber tube slipped round it. The extraperitoneal tissues are now exposed, and by tearing the transversalis fascia they may be stripped up a little from the iliopsoas muscle. Next, the deep epigastric vessels are identified, and divided close to the parent trunks.

Fig. 3—Crescentic defect, variable in extent, remaining after excision of devitalised femoral skin.

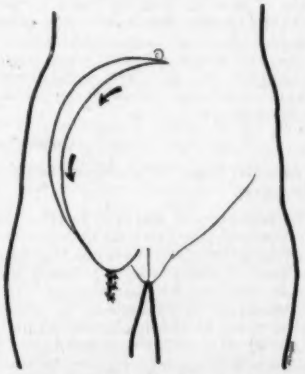

Fig. 4—Closure of crescentic defect, without tension, by downward displacement of abdominal flap.

At this stage it may sometimes be helpful to open the peritoneum and explore with the finger the state of the iliac nodes along the brim of the pelvis. The finger inserted in this way also helps to strip the fatty tissues off the peritoneum, much as a hernial sac is cleaned. Once the plane has been found, the peritoneum can be closed.

The anterior abdominal wall is now lifted and retracted upwards by an assistant. The peritoneum is pushed further and further up off the iliac vessels and is taken and lifted upwards with the assistant's retractor. The common-iliac bifurcation is identified, and the exposure may if desired be carried even above this level (fig. 2). My practice, however, is to stop at this point unless the external iliac nodes are obviously malignant.

The fatty mass surrounding the vessels—often very scanty but occasionally bulky—is now stripped downwards towards the inguinal ligament. Large nodes may need individual and careful dissection from the vein with curved scissors. A special search is made in the upper end of the femoral canal, and in the region of the obturator canal, where nodes are often found. Removal of this tissue completes the clearance.

Closure

The abdominal wall is sutured in layers. The inguinal canal may be repaired as for hernia, or, if desired, obliterated. The femoral canal is closed from above with a thread mattress-suture or darn.

Closure of the skin wound begins with the excision of any femoral skin of doubtful viability. By this time it will be clearly delimited by its colour from healthy skin. A crescentic defect results, convex downwards (fig. 3). The abdominal flap is now brought into position and rotated gently and evenly downwards to close this gap. It is held in position, and any slight tension is distributed by strategically placed interrupted sutures (fig. 4). To eliminate tenting, a single mattress-suture of nylon is now carefully placed at right-angles to the wound edge and 5 cm. or so above it, picking up the external-oblique aponeurosis. The site of this important "pin-down" stitch is chosen by noting the point at which the flap may be held down most effectively. The stitch is tied over a sliver of corrugated rubber, just tightly enough to obliterate dead space. Very rarely, two such stitches are needed (fig. 5), but care must be taken not to impair the blood-supply to the skin edge. Sometimes, in addition, it is advantageous to pick up underlying muscle in one or two of the stitches apposing the skin edges.

As the suturing proceeds, some puckering of the upper and outer margin of the wound becomes noticeable. Its degree depends on the diameter of the flap, is less in women than in men, and is least in big patients with a long and broad abdomen. If the puckering is not too great it may be distributed by judicious placing of the stitches; otherwise the outer margin of the wound may be mobilised up over the costal margin, and a spur taken out as required (fig. 6) to improve the cosmetic effect. I have never yet had to use a Thiersch graft in this area, but in an exceptional case it might, of course, prove necessary. *No drainage tube is used.*

Dressing

A strip of folded gauze is first laid all along the wound edge. Next, a vertical "faggot bundle" of soft rolls of gauze, five or six in number and 10–15 cm. wide, is placed across the hollow of the groin, in the long axis of the limb, and held in place under firm pressure by a strip of 'Elastoplast' stretched from the medial aspect of the thigh outwards and upwards, parallel with the groin, to the patient's flank. This arrange-

Fig. 5—Wound sutured. One "pin-down" stitch usually suffices; two are rarely necessary.

Fig. 6—Extension of incision by spur to prevent skin from puckering.

Fig. 7—Bilateral ilio-inguinal block dissection.

ment is now covered by more gauze and wool, and finally fixed either with elastoplast or a spica of crêpe bandages. In any case the dressing should be sealed off completely from the vulva and perineum with elastoplast. The dressing is left undisturbed for ten days, unless there is evidence of serious wound infection. Throughout this period penicillin and streptomycin are given.

Variants

Reverse flap.—Abdominal scars may sometimes cause difficulty.

If they are old and well healed, they may be disregarded. Alternatively the flap may be cut in the reverse sense, with the open ends of the C towards the flank, and its back to the midline. Usually the flap based on the midline gives the easiest suturing without tension. Moreover the lymph from the dissected groin appears to drain to the opposite groin rather than to the ipsilateral axilla; and the reversed flap would interfere with this drainage. This question of lymph drainage is being investigated by tracer technique.

Bilateral dissection, in theory, presents no difficulties. My cases have mostly been of leg tumours (melanomas), and bilateral dissection has been done in only one case, by one of my colleagues. A fortnight was allowed between the two sides, and healing was entirely satisfactory (fig. 7).

The *iliac dissection* may, of course, be omitted, and it would be out of place here to discuss its pros and cons. Division of the inguinal ligament is unnecessary. It certainly gives the theoretically ideal "monoblock" dissection, but its reconstruction is difficult and unsatisfactory, especially as the introduction of much foreign suture material into this particular wound is obviously undesirable.

Results

This operation has now been performed on eleven patients, by myself or my Westminster Hospital colleagues. The cases have included malignant melanoma of the leg or of the buttock, carcinoma of the penis, and carcinoma of the vulva. In addition, the skin-flap procedure has been used in two cases of radionecrosis of the groin skin due to heavy irradiation many years previously. In one of these healing was somewhat delayed at the pubic end of the wound, owing to insufficient removal of damaged tissue. It is now perfect, however, and the patient is at full work without any trace of œdema (nine months). In one case of melanoma the iliac dissection was incomplete; and, though healing was perfect, this patient subsequently developed massive œdema due to tumour, in spite of postoperative radiotherapy. There have been one or two other minor imperfections of healing, but they have been really negligible in their effects. The sound supple linear scar which results is shown in the accompanying photographs.

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"It is also certain that the culture of Europe will continue to be extroverted. It will always seek for the causes of its discomfort in the outer environment, and assume that the questions about the point in living have not yet been answered because knowledge is as yet inadequate, and that with an increase in knowledge the answer will be found. It will continue to be ignorant of the fact that its way of living is only one possible way, and it will go on believing that all other cultures are trying to do what it is trying to do, only doing it less successfully. Thus its attempt to solve all problems will always be by making more determined attacks on man's outer environment, by bringing refrigerators to hot countries and central heating to cold. The two variations of European culture, Russian communism and American individualism, are in complete agreement on all these points."
—PETER NATHAN, *Retreat from Reason*, London, 1955.

ERGOMETRINE WITH HYALURONIDASE

A. H. LABRUM
M.B. Camb.
RESEARCH ASSISTANT, OBSTETRIC UNIT, UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL, LONDON

ADMINISTRATION of ergometrine maleate by intramuscular injection, with hyaluronidase to promote its absorption, was suggested by Kimbell (1954), who found that in preventing postpartum hæmorrhage it was almost as effective as intravenous ergometrine. Intramuscular injection has the advantage that it can be performed by a midwife.

In studying a small series of puerperal patients I have been able to demonstrate the adjuvant effect of hyaluronidase by measuring tonic contractions of the uterus induced by intramuscular ergometrine with and without the aid of the enzyme.

The women selected had had perfectly normal pregnancies and labours, and their uterine contractions were recorded on the second and third days after delivery. The response to ergometrine was recorded with an external abdominal tocograph, applied to the abdomen thirty minutes before the injection. The recordings were assessed in terms of the latent period between the injection and the onset of a tonic uterine contraction, and of the maximum tension developed in that contraction. The excursion of the tocograph was calibrated by comparison with the excursion produced by a standard weight.

In about half the recordings, uterine contractions occurred before or with the injection of the drug. This was interpreted as an emotional response, and due allowance was made for it in assessing the tracings.

Half the patients were given an injection of ergometrine alone on the second day after delivery, and received the same dose with hyaluronidase ('Hyalase') on the third day. The remainder of the series received the doses in the reverse order. Two doses of ergometrine maleate were used, 0·25 mg. and 1·0 mg. The dose of hyaluronidase was 1000 Benger units (one ampoule). The volume of each injection, whether with or without hyaluronidase, was 0·5 ml., which necessitated the preparation of a stronger solution of ergometrine maleate (2 mg. per ml.) than is on the market.

The nature and object of the investigation was explained to the patients, and also the possible therapeutic effect in reducing after-pains—an effect in fact observed in four cases in which these pains had been severe.

It will be seen from the table that with doses of 0·25 mg., the latent period between injection and contraction is almost halved with hyaluronidase, while the average height of contraction is increased by 30%. With doses of 1·0 mg. the addition of hyaluronidase made little difference to the average latency, but increased the average maximum contraction by 53%. An increase in dose alone decreased the latency but did not increase the maximum height of contraction. Hence at both dose-levels addition of hyaluronidase to ergometrine improved its action on the uterus as regards both latency and maximum contraction. Kimbell (1954) showed that, where ergometrine maleate was given intramuscularly with hyaluronidase, 0·5 mg. was more effective than 0·25 mg. in reducing postpartum hæmorrhage. It was

RESULTS OF INVESTIGATION

	0·25 mg.		1·0 mg.	
	Ergometrine	+ Hyaluronidase	Ergometrine	+ Hyaluronidase
No. of patients	6·0	9·0	3·0	4·0
Average latency (minutes) ..	9·9	5·4	4·0	4·6
Average tension (grammes) ..	38·0	50·0	39·0	60·0

thought that 1·0 mg. might prove still more effective, but all seven patients receiving this dose had unpleasant symptoms, including nausea, lassitude, "couldn't face the next meal," and general malaise lasting not longer than three hours after the injection. These findings suggested that, intramuscularly or intravenously, the widely used dose of 0·5 mg. of ergometrine is in fact the optimum. My own observations support Kimbell's view that the action of hyaluronidase should enable the midwife, using intramuscular injections, to get results almost as good as those obtained by the doctor with intravenous injections.

I wish to thank Prof. W. C. W. Nixon for permission to do this work in the obstetric department of University College Hospital, and for his advice and criticism, and Dr. R. O. Schild, university reader in pharmacology at University College, for his advice and interest.

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TRACHEOTOMY IN ACUTE RESPIRATORY EMBARRASSMENT

R. G. PITMAN
M.D. Lond., M.R.C.P., F.R.C.P.(C.)
SENIOR MEDICAL REGISTRAR, LIVERPOOL THORACIC UNIT

FRANK WILSON
M.B. Lond., D.A.
RESIDENT ANÆSTHETIST, AINTREE AND FAZAKERLEY HOSPITALS, LANCS

MANY textbooks, in describing the indications for tracheotomy, mention conditions which give rise to laryngeal obstruction—e.g., diphtheria; foreign bodies; scalds of the glottis; syphilitic, tuberculous, and malignant disease of the larynx; œdema of the glottis; and carcinoma of the thyroid.

Recently tracheotomy has also been advocated to overcome the obstructed airway in poliomyelitis. It is accepted that the operation should not be too long delayed, and that the earlier it is done the less will be the risk of such complications as mediastinitis, hæmorrhage due to congestion, and surgical emphysema (Watkyn-Thomas 1952).

In cases of head injury and after neurosurgical operations tracheotomy may be necessary to provide an adequate airway; for in these cases there may be diminished consciousness for many days, with resultant failure to cough up bronchial secretions. Tracheotomy has been used, too, in tetanus (Herzon et al. 1950) and in barbiturate poisoning with respiratory depression. Our purpose here is to suggest that it should be tried in some other conditions, both medical and surgical.

Many patients dying from severe *myocardial infarction* are cyanosed and unconscious, with hanging jaw, stertorous bubbly respirations, cold sweating skin, and imperceptible pulse. We think that part of this clinical picture is caused by hypercapnia, and that tracheotomy, suction, and intratracheal oxygen would be beneficial.

Tracheotomy may also be of value in selected cases of *subarachnoid hæmorrhage* and also in *eclampsia*, in which the immediate cause of death may sometimes be the anoxæmia and hypercapnia which result from respiratory inefficiency.

Many patients with *emphysema and bronchitis* have sufficient pulmonary ventilation to maintain adequate respiratory exchange when they are otherwise reasonably healthy; but any condition necessitating surgery, such as repair of a perforated duodenal ulcer, places a further burden on their respiratory reserve. Diminution of diaphragmatic movements by pain or by excessive amounts of morphine may cause congestion and collapse of the lung bases shortly after operation, leading the patient to relapse into coma and die from bronchopneumonia or an inadequate respiratory reserve. Tracheotomy might be useful in some of these cases if the sputum could be aspirated, the dead space reduced, and better oxygenation provided.

An adequate airway is essential, of course, in all phases of any illness, whether accompanied by coma or not. Indeed an adequate airway may prevent the onset of coma by overcoming anoxæmia and hypercapnia.

Mushin (1955) says that the treatment of an unconscious patient resolves itself into ensuring adequate oxygenation through a clear airway, and he explains fully the advantages and reasons for tracheotomy, positive-pressure ventilation, and frequent suction.

Previously Echols et al. (1950) described tracheotomy as "superior to any other method of maintaining efficient aeration of the lungs in unconscious patients. It should be done promptly and unhesitantly in every patient unconscious from a head injury if it seems likely that the coma will persist for more than twenty-four hours and if non-surgical methods of maintaining an adequate airway appear to be inefficient."

Westlake (1954) concluded that "acute respiratory failure with increasing anoxæmia, hypercapnia and acidæmia is responsible for the distinctive clinical picture observed during exacerbation of infection in the chronic bronchitic and emphysematous subject." He explains that the physiological response of patients with chronic bronchitis and emphysema is often abnormal in that they cannot increase ventilation enough to prevent a rise in arterial carbon dioxide and hydrogen-ion concentration.

Donald (1953) has shown that in patients with damaged lungs the carbon-dioxide level rises considerably as anoxæmia develops—which suggests anoxic central respiratory failure. Westlake (1954) emphasises that this respiratory failure is often fatal before the causal pulmonary disease can be cured.

Tracheotomy in Acute Pulmonary Infection

The treatment of acute pulmonary infection in patients with chronic bronchitis and emphysema is usually based on the administration of antibiotics and oxygen and the relief of respiratory obstruction. Conventionally, the respiratory obstruction is treated with antispasmodics, by postural and percussion drainage, and by encouraging the patient to cough. But it is well known that many such patients are too exhausted to cough up their sputum spontaneously, or else so drowsy or comatose that coughing and postural drainage are impossible. Simpson (1954), describing the clinical picture on admission to hospital, mentions such complications as drowsiness, confusion, irrationality, and coma. In patients with persistent hypercapnia these symptoms are commonly exaggerated by oxygen therapy.

In dealing with such cases is not the relief of the respiratory obstruction of paramount importance? By all means let antibiotics be given, but let them be given to a patient with an adequate airway who is not handicapped by anoxæmia and hypercapnia. Antibiotics will do little good unless the patient remains alive to benefit from their action.

The signs which suggest insufficient respiratory exchange are dyspnœa, overaction of the accessory muscles of respiration, diminished chest movement, profuse sweating, confusion, and drowsiness or coma. Cyanosis may be present; but, if oxygen is being administered, absence of cyanosis does not mean absence of hypercapnia.

As soon as it becomes evident that a patient is not clearing his trachea and bronchi, tracheotomy should be performed; retained secretions can then be sucked out and oxygen given through the tracheotomy tube. In some patients relief from the hypercapnia may have to be hastened by hyperventilation with oxygen and the use of a carbon-dioxide absorber, or with an air-oxygen mixture at a flow of about 20 litres a minute without the use of an absorber. The earlier tracheotomy is performed, the less likely is the patient to suffer from the

effects of carbon-dioxide narcosis and anoxæmia, and the less likely is the onset of cardiac failure. Furthermore, patients who are drowsy or comatose will regain consciousness.

The operation must be a planned one and should not be left as a last resort. Oxygen should be given by face-mask throughout the operation, which is done under either local or general anæsthesia.

Before tracheotomy is performed one must have a powerful suction apparatus, in working order, at the bedside. During the operation hæmostasis should be secured before the trachea is opened. When the tracheotomy has been effected, secretions should be aspirated before the patient is hyperventilated. If a carbon-dioxide absorber is used, the soda-lime should be damped to prevent insufflation of the lime dust into the respiratory tract. Oxygen given through the tracheotomy tube should be humidified to reduce irritation of the trachea. One should be prepared to give artificial respiration to overcome the apnœa which may follow the tracheotomy. This apnœa is due to lowering of the carbon-dioxide level, because a respiratory centre which is accustomed to a high concentration of carbon dioxide may cease to function when the level falls.

In hyperpyrexial patients hyperventilation may cause a considerable fall in blood-pressure. If this fall is detected it may be treated by stopping the hyperventilation or with a noradrenaline drip.

Recent experience in surgical and medical cases suggests that the above reasoning may be correct. The following is an illustrative case-report:

Case 1.—A man, aged 41, on admission at 7.20 P.M. was too dyspnœic to give much history. He had had chronic bronchitis and emphysema for fourteen years and had become ill with dyspnœa, a productive cough, and right-sided pleurisy four days before admission.

Examination showed a very ill man, sweating and cyanosed. Temperature 101·4°F. There were signs of consolidation at the base of the right lung and a pleural rub was heard in the right axilla.

Treatment and Progress.—Penicillin and oxygen were given, but the patient became increasingly drowsy; at 12.30 A.M. he was semicomatose. Next morning he was deeply comatose, and cyanosed. The cyanosis was relieved by oxygen, but in other respects the deterioration progressed. It was realised that his coma might be due to carbon-dioxide narcosis, but oxygen therapy was continued (Simpson 1954).

At this point accumulation of bronchial secretions was diagnosed and a tracheotomy performed. Thick green sputum was aspirated. Next day there was a definite improvement and the patient responded to shouted commands. Suction was applied every quarter of an hour and oxygen given continuously through the tracheotomy tube.

On the following day he was conscious and taking fluids. The tracheotomy tube was removed on the fourth day because he was coughing well. He continued to improve steadily and a month after admission he was ambulant. At the height of his illness he showed signs of cardiac failure—e.g., sacral and peripheral œdema—but these have now disappeared.

Postoperative Tracheotomy

Tracheotomy may also play an important part in postoperative management particularly of patients with chronic bronchitis and emphysema and after thoracic operations. Such cases often demonstrate the importance of recognising moderate depression of respiration. The condition is insidious and therefore often unrecognised. It leads to inefficient lung ventilation and allows the accumulation of carbon dioxide in the tissues. During the immediate postoperative period respiratory movement is often limited by pain, exhaustion, or anxiety. Coughing is weak and allows bronchial secretions to accumulate. The provision of an adequate airway at this stage is essential, and, when conventional methods fail, tracheotomy is indicated, as in the following case:

Case 2.—A man, aged 27, had had pulmonary tuberculosis for ten years. Radiography showed disease of the right lung, he was considered suitable for surgery, and right upper lobectomy, apical lower segmental resection, and corrective thoracoplasty were performed.

After operation he was dyspnœic and cyanosed and developed a bronchopleural fistula. His respirations became rapid and shallow, and his sputum was copious, frothy, and blood-stained. On the eleventh postoperative day he was irrational and stuporous for short intervals. His cough was weak.

His condition remained more or less unchanged until he became comatose in the fifth postoperative week. Consciousness returned on hyperventilation with 20 litres of air-oxygen flow for eight minutes. Two hours later he relapsed into coma, which was relieved by hyperventilation after twelve minutes. Three hours later he was comatose again and could not be brought round by hyperventilation. He was cyanosed and sweating profusely. His pulse-rate was 130, pulse regular and of poor volume, and blood-pressure 90/60 mm. Hg. His respirations were shallow and rapid, there were râles over both lung bases, and a loud presystolic triple rhythm was audible over the apex of the heart. Sacral œdema was present. His condition rapidly became desperate, his tongue fell back, his lower jaw sagged, and a strong tracheal tug was present. His pupils were widely dilated and his pulse imperceptible.

Tracheotomy was performed, a large quantity of thick bloodstained sputum was aspirated, and oxygen at 2 litres per min. was given through the tracheotomy tube. The patient recovered consciousness at once, his pulse returned, and sweating ceased. Next morning he was conscious and rational, with blood-pressure 130/90. His general condition improved steadily after this, the sacral and pulmonary œdema disappearing slowly. His bronchi were aspirated hourly through the tracheotomy tube, which was eventually removed on the twenty-first day.

Coma did not return, and his heart sounds were normal. Seven weeks after the tracheotomy he had been ambulant for a fortnight.

Electrocardiography soon after recovery of consciousness from the first coma showed ST raised in lead II with inversion TII and TIII, and on the day after tracheotomy ST raised in leads II, III, V_3, V_3, and V_4. TII was positive and TIII inverted. The conclusion was that the ischæmic changes had improved, whereas the current of injury was still present. A week later ST was still raised in leads II and V_3–V_4, but T was inverted in V_1–V_4. Later electrocardiography showed right axis-deviation with no current of injury.

The electrocardiograph changes in this second case are very interesting and were attributed on clinical grounds to acidosis. Whether the current of injury could have been prevented by earlier relief of the hypercapnia is debatable. Altschule and Sulzbach (1947) describe reversible RS-T interval changes in severe carbon-dioxide acidosis. They found that the administration of a mixture of 5% carbon dioxide and 95% oxygen to a man was associated with electrocardiographic changes indicating myocardial injury. These changes were rapidly reversible after cessation of each experiment. MacDonald and Simonson (1953) described electrocardiographic changes during and after the inhalation of 30% carbon dioxide for 38 sec. on average. They found abnormal rhythms, low voltage, inverted P waves, and increased T waves. They concluded that the changes found in a very brief form of carbon-dioxide acidosis could furnish only tentative suggestions about the possibility of changes in cardiac function in the respiratory acidosis found in pulmonary disease and during surgical anæsthesia. Nevertheless they held that the possibility should be considered in clinical carbon-dioxide retention.

In the cases described above, and in several others seen, little doubt was felt, by those who witnessed it, that the tracheotomy saved the patient's life.

Primary Advantages of Tracheotomy

Tracheotomy provides an unobstructed airway, and the mechanical obstruction of the relaxed tongue is by-passed.

Obstruction due to mucus is relieved because the suction catheter can easily be applied to the trachea and bronchi.

Dead-space air is reduced. If the tidal volume is 500 c.cm. and the dead-space air is 120 c.cm., the effective tidal volume is 380 c.cm. If, however, the tidal volume is 150 c.cm., the effective tidal volume is only 30 c.cm. A tracheotomy which reduces the dead-space air from 120 to 60 c.cm., will thus treble the effective tidal volume and considerably reduce tachypnœa. It is obvious that, before tracheotomy, the tachypnœa serves no useful purpose, because although asphyxia will be delayed it will not be prevented. Reduction of the dead space by tracheotomy may increase the tidal volume sufficiently to prevent asphyxia.

On the relief of dyspnœa the patient becomes less frightened and less agitated and usually passes immediately into a restful sleep. As a result, the oxygen consumption and the metabolic rate are reduced.

Other Benefits of Tracheotomy

Oxygen consumption is also decreased because the accessory muscles of respiration need not be used any longer, and less violent and less frequent respiratory excursions of the thoracic wall are required.

The tachypnœa is reduced, and the heart is given more time to fill and to discharge its contents.

Investigations, such as examination by portable X-ray apparatus, may be made without distressing the patient to the same extent as when he is severely dyspnœic.

Nursing is easier with a coöperative conscious patient than with one who is irrational or unconscious.

Disadvantages of Tracheotomy

The patient loses the power to cough. This, however, may easily be overcome, when he is stronger, by occluding the hole in the tracheotomy tube.

Speech is "lost." The fact that this loss is only temporary should be explained to the patient, if he is conscious, before tracheotomy is performed, or as soon as possible when he emerges from coma. Proof that he has not "lost his voice" may be provided by occluding the hole in the tracheotomy tube.

Many think that tracheotomy is a mutilating operation, but usually the wound heals very quickly after a few days. Approximation of the skin by sutures is not as a rule required, even though mucus may leak through the skin opening for some days after removal of the tube. The scar after the operation is slight.

Disadvantages of Other Methods of Maintaining an Adequate Airway

Intermittent bronchoscopic aspiration with a desperately ill patient is distressing if it has to be repeated often.

An endotracheal tube is uncomfortable, tends to become kinked, and may cause œdema of the glottis, making its replacement difficult or impossible.

Conclusions

In acute respiratory embarrassment, whether in medical or postoperative cases, the provision of an adequate airway is essential.

The conventional methods of dealing with respiratory embarrassment are often inadequate, and in such cases tracheotomy, with aspiration of retained tracheobronchial secretions, adequate oxygenation, and elimination of carbon dioxide, can be life-saving.

We are greatly indebted to Dr. J. R. Esplen for his advice and helpful criticism in preparing this paper. We also wish to thank Dr. N. Bennett-Jones, Dr. O. F. Thomas, and Mr. J. K. B. Waddington for permission to publish details of their cases.

References at foot of next column

THE USE OF MORPHINE AND PROPANTHELINE IN INTRAVENOUS CHOLECYSTOGRAPHY

A. J. SANGSTER
M.B. Edin., D.M.R.
RADIOLOGIST, RAIGMORE HOSPITAL, INVERNESS

SINCE the introduction of 'Biligrafin' ('Cholografin' in U.S.A.) by Frommhold in 1953, several reports have been published which confirm its value in the investigation of the biliary tract in cases where oral cholecystography does not display the gall-bladder or the common bile-duct, or after cholecystectomy. Maximum visualisation of the bile passages is obtained 30–45 minutes after slow intravenous injection of 40 ml. of biligrafin (Sénèque et al. 1954). But the shadows are sometimes disappointingly faint (Berk et al. 1954). Absence of, or poor, visualisation of the main biliary ducts may be due either to disease in the liver parenchyma, in which case the dye is eliminated chiefly by the kidneys and the density of the resultant pyelogram then serves in some measure as a test of hepatic function (Gershon-Cohen et al. 1954), or to very rapid passage of the dye into the duodenum.

Nemours-Auguste and Barag (1954) report that after injection of morphine the sphincter of Oddi closes within five minutes and that visualisation of the hepatic ducts is thereby improved. Walters et al. (1937) showed that this spasm lasted two hours with a hypodermic injection of morphine but much less when the drug was given intravenously. This action of morphine is of value not only in preventing the exodus of dye to the duodenum, but also in providing information about the integrity of the sphincter.

On the basis of these reports, and of Lubert and Krause's (1953) use of a fluoroscopic spot-film device, with graded compression, for cholecystography, a technique has been evolved which has now been used in 66 cases at this hospital. It has reduced the number of radiographs required and the time spent by the patient in the X-ray department.

Technique

After the usual preparation biligrafin 40 ml. is given by slow intravenous injection. Thirty minutes later morphine gr. $^1/_6$ is given intravenously. After another thirty minutes a 12 × 10 in. film of the gall-bladder region is taken. The average exposure factors used are 60 kV peak, 100 mA-sec., 40 inches. F.F.D. This film, which is examined as soon as possible, shows the landmarks for subsequent fluoroscopy; it also shows whether the sphincter of Oddi is intact or not, degree of visualisation of the gall-bladder, and the density of renal excretion of the dye. In the light of this information the patient is screened, and four views are obtained on 15 × 6 in. film using the fluoroscopic spot-film device with graded compression. In the average case this may suffice.

Illustrative Case-report

Case 1.—A man, aged 47, was admitted on April 9 with jaundice following an attack of acute epigastric pain a few days previously. He had had in 1952 an attack of jaundice, which had lasted a few weeks.

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On admission there was no gross physical abnormality, and the chemical findings were bile pigments present in urine; serum-diastase 294 units per 100 ml.; serum-bilirubin 2·2 mg. per 100 ml.; direct van den Bergh reaction positive; cephalin cholesterol flocculation strongly positive: blood-urea 44 mg. per 100 ml.; erythrocyte-sedimentation reaction 49 mm. in one hour (Westergren); and Wassermann reaction negative.

April 21: the serum-diastase level had fallen to 178 units per 100 ml., and next day cholecystography was done using 'Telepaque.' There was no visualisation of the gall-bladder. Later that day the patient had epigastric pain, and the serum-diastase level rose to 320 units per 100 ml.

May 10: the patient's general condition was very much improved, and the serum-diastase level had again fallen. Cholecystography was done by the technique described above. The film at sixty minutes showed dilated intrahepatic ducts, a small shrunken gall-bladder, considerable narrowing of the terminal few centimetres of the common bile-duct, and dye in the duodenum. The films obtained with compression confirmed these details. Fibrosis of the common bile-duct and stenosis of the sphincter of Oddi, with associated recurrent pancreatitis, were diagnosed, and the diagnosis was confirmed at operation on May 13.

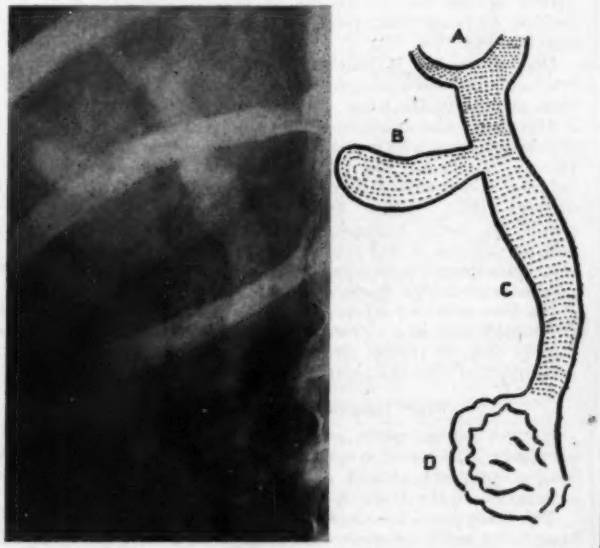

Fig. 1—Cholangiogram (60-minute film) showing dye in biliary tract but none in duodenum, owing to spasm of sphincter of Oddi induced by morphine: A, intrahepatic bile-ducts; B, gall-bladder; C, common bile-duct; D, duodenum.

Possible Complications

Two possible complications of the use of intravenous morphine in cholecystography are (1) pain may be produced by the spasm of the sphincter of Oddi, and (2) pancreatitis may be caused by reflux into the pancreatic duct. In the present 66 cases no reactions were observed with intravenous biligrafin. No nausea or vomiting was reported, but 2 patients complained of pain during the investigation. This pain was fairly severe, and serial radiographs showed that it lasted throughout the period of retention of dye in the common bile-duct and was relieved as the dye started to drain into the duodenum.

On the assumption that this pain was due to spasm of the sphincter of Oddi it was decided to try to relieve it by administering propantheline bromide, which, in doses well below toxic limits, has well-marked anticholinergic activity both at parasympathetic effector sites and at the ganglia. Laboratory tests show that it is much more active than atropine, and side-effects have been slight or absent in clinical trials. The results obtained are illustrated in the following case.

Case 2.—A woman, aged 63, was admitted because of recurrent biliary colic. Cholecystography was carried out by the technique described. The sixty-minute film showed the intrahepatic ducts, a small gall-bladder, and a fairly large common bile-duct filled with dye. There was no dye in the duodenum, which is seen outlined by gas (fig. 1). Propantheline 30 mg. was then given intravenously, and in three minutes there was a rush of dye into the duodenum (fig. 2). There was no pain during the investigation, and no side-effects were observed.

The rapid relaxation of the sphincter suggested that propantheline might be of value where pain was felt. 2 other patients who had had fairly severe pain during cholecystography were therefore reinvestigated in the same way, and intravenous propantheline again rapidly abolished the spasm of the sphincter, released a flood of dye into the duodenum, and relieved the pain.

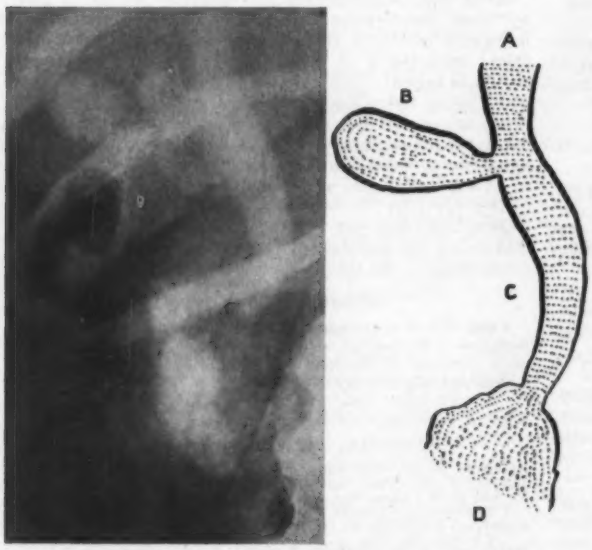

Fig. 2—Cholangiogram 3 minutes later than fig. 1, showing sphincter of Oddi relaxed by intravenous propantheline, and duodenum flooded with dye: A–D as in fig. 1

Summary and Conclusions

The technique used in this hospital for intravenous cholecystography with biligrafin and intravenous morphine is described.

Morphine is used to induce spasm of the sphincter of Oddi and thus facilitate visualisation of the biliary tract. Information about the integrity of the sphincter is also thereby gained.

Propantheline bromide can be used to relieve colic, whether due to spasm of the sphincter or associated with biliary reflux and pancreatitis.

These findings justify a wider application of this or a similar technique, such as that of Aldridge (1955), who makes use of a preliminary fatty meal and intravenous pethidine.

I am grateful to Dr. J. Ronald for his coöperation, and to Messrs. G. D. Searle & Co. for supplies of propantheline bromide ('Pro-Banthine').

References at foot of next column

MULTIPLE MYELOMATOSIS WITH LARGE MYELOMA CELLS AND NORMAL PLASMA-PROTEINS

B. J. S. HARLEY
M.D. Lond., M.R.C.P.
LATE REGISTRAR

T. A. KEMP
M.D. Camb., F.R.C.P.
CONSULTANT PHYSICIAN

PADDINGTON GENERAL HOSPITAL, LONDON

A. D. ABDULLAH
M.B. Sydney, M.R.C.P.
CONSULTANT PHYSICIAN, GERIATRIC UNIT, CENTRAL MIDDLESEX HOSPITAL, LONDON

MULTIPLE myelomatosis can no longer be termed rare. In hospital admissions over a five-year period Adams et al. (1949) found an incidence similar to that of Hodgkin's disease.

Clinically, multiple myelomatosis is characterised by pains and tenderness in the bones, wasting, and anæmia, and the bone-marrow contains cells of the myeloma series varying from larger and more primitive cells with much cytoplasm to smaller plasma cells with typical "cartwheel" nuclei. It is usually accepted that the most characteristic feature is the increase of a highly homogeneous serum-globulin which is normally present in only small amounts in the family of normal proteins (Putnam and Udin 1953).

Since electrophoresis was introduced by Tiselius (1937) to facilitate the splitting of serum-globulin into different components, many cases investigated by this method have been published. Gutman et al. (1941) classified sera from patients with multiple myelomatosis into three types:

(1) Sera with increased γ-globulin fraction.
(2) Sera with increased β-globulin fraction, or a fraction migrating between β and γ (M.M. fraction).
(3) Sera with apparently normal patterns, this group being appreciably smaller than the other two groups.

More recently less time-consuming techniques using filter paper have been described (Martin and Franglen 1954, Durrum 1950), but results with these methods are rather variable, depending on the technique used.

Case-records

The following cases are reported to draw the attention of clinicians to difficulties in diagnosis where the laboratory findings are atypical.

Case 1.—A woman, aged 76, had six weeks' history of cough with purulent sputum followed by pains in the chest and back, worse on movement and coughing. She felt weak and had lost weight. Two years previously she had had tuberculous pleurisy necessitating rest in bed for three months.

On examination she had generalised muscular wasting and localised areas of tenderness over the ribs and lumbar vertebræ. There were signs of a right basal pneumonia, which later responded satisfactorily to penicillin.

Examination of the blood showed hæmoglobin 11·7 g. per 100 ml.; red cells 3,820,000 per c.mm., white cells 7800 per c.mm. (polymorphs 57%, lymphocytes 40%, monocytes 3%), erythrocyte-sedimentation rate (E.S.R.) 56 mm. in one hour (Westergren). The sputum contained no tubercle bacilli on repeated examination. The serum-calcium level was 10·0–11·4 mg. per 100 ml., serum-phosphorus 3·4 mg. per 100 ml., and serum-alkaline phosphatase 10 King-Armstrong units.

Radiography of the chest showed tuberculous infiltration of the right apex with pleural thickening, and fractures of the 3rd, 7th, and 9th ribs on the left side; and radiography of the lumbar spine showed generalised osteoporosis, with collapse of the body of the 10th vertebra. This suggested a secondary neoplasm, but no evidence of a primary growth was found.

Biopsy of the sternal marrow showed a hypocellular marrow with 10% of large pseudopodial cells showing vacuolation of cytoplasm and an undifferentiated nucleus and resembling early reticulum cells. Although no typical myeloma cells were seen, myelomatosis was considered; but the serum-protein levels were normal (total 6·4 g. per 100 ml.: albumin 4·4 g., globulin 2·0 g.).

Urine.—No Bence Jones protein or albumin was found on repeated examinations.

Further investigations (Dr. G. Discombe).—The blood-urea level was 48 mg. per 100 ml., plasma sp. gr. 1·215, total serum-protein level 4·9 g. per 100 ml., with γ-globulin virtually absent, β-globulin and α_2-globulin at the upper limits of normality, and albumin slightly reduced. The zinc-sulphate turbidity was 0·6 Kunkel unit (normal 2–10 units). Electrophoresis was done with a filter-paper technique using a barbitone buffer at pH 8·6 and criteria of normality as described by Discombe et al. (1954). The zinc-sulphate test has been shown to bear a high degree of correlation with the amount of γ-globulin present in the serum (Discombe et al. 1954).

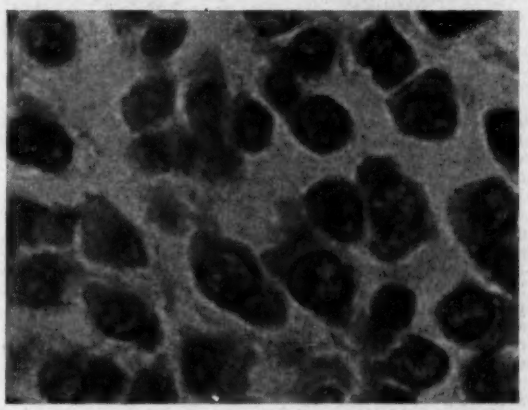

Fig. 1—Case 1: post-mortem specimen from myelomatous deposit in ribs, showing numerous poorly differentiated myeloma cells.

Course.—There was little change in the patient's general condition; she was still thought to have neoplastic metastases, and further radiography after three months showed several small punched-out areas of rarefaction in the ribs and pelvis. The general decalcification was more obvious. Biopsy of bone-marrow, this time from the iliac crest, showed for the first time typical myeloma cells, about 40% of the total cellular count. A clear gradation could be made out between the primitive cells previously seen and the mature myeloma cells now present. Repeat examination of the serum by paper electrophoresis (Dr. J. Green) again showed no abnormal component. The serum-protein levels were again normal (total 6·7 g. per 100 ml.: albumin 4·5 g., globulin 2·2 g.), and again no Bence Jones protein was found in the urine.

The patient's general condition steadily deteriorated until she died.

Necropsy Findings (Dr. C. C. Bryson).—Healed granulomatous tubercles were found in the lungs, and pink gelatinous deposits in the ribs (fig. 1), vertebræ, sternum, and pelvis, but not in the skull. No deposits were found elsewhere. Histologically a large amount of free iron was seen in the spleen and liver, and the deposits in the bone-marrow showed a moderate increase in the number of myeloma cells of large type.

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Case 2.—A porter, aged 69, was admitted complaining of pain in the back and loss of weight of two years' duration and cough with variable amounts of yellow sputum for the past four years necessitating his admission to a hospital on two occasions with bronchitis.

On examination he was pale and wasted, with dyspnœa and œdema of his legs. Generalised rhonchi and basal râles were audible in his lungs, but there was no clubbing of the fingers. Acute bronchitis with emphysema was diagnosed, and he was treated with antibiotics, which produced slight improvement.

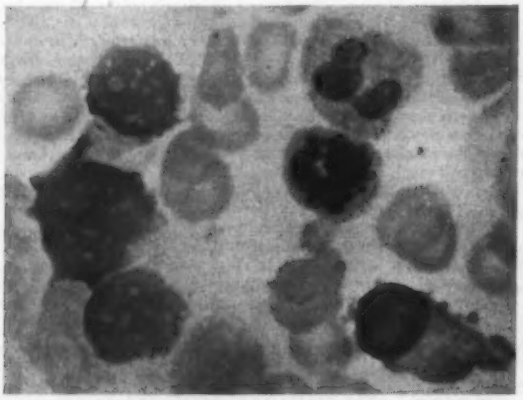

Fig. 2—Case 2: sternal marrow, showing a group of three large myeloma cells.

Examination of the blood showed Hb 11·1 g. per 100 ml.; E.S.R. 16–20 mm. in one hour (Westergren); blood-urea level 136 mg. per 100 ml., serum-calcium 8·7 mg. per 100 ml., serum-phosphorus 6·3 mg. per 100 ml., serum-alkaline phosphatase 9·0 King-Armstrong units, serum-acid phosphatase 5·3 King-Armstrong units; serum-protein levels: total 5·0 g. per 100 ml. (albumin 2·6 g., globulin 2·4 g.) on Sept. 9, 1954, and total 5·0 g. per 100 ml. (albumin 3·4 g., globulin 1·6 g.) on Sept. 24, 1954; zinc-sulphate test 4·0 Kunkel units; and thymol turbidity 0·8 unit.

Urine.—Bence Jones protein was present in moderate amounts.

Electrophoresis showed no abnormal components. Sternal marrow was hypoplastic, and large numbers of myeloma cells (fig. 2) of primitive type, with especially fragile cytoplasm and nucleoli, were seen.

Radiography of pelvis, femora, skull, and ribs showed numerous punched-out areas typical of myelomatosis.

Course.—The patient's condition deteriorated, and he died in uræmia on Oct. 8, 1954, with a blood-urea level of 276 mg. per 100 ml.

Necropsy Findings (Dr. C. S. Treip).—Bilateral basal bronchiectasis was found with small abscesses containing pus and surrounding fibrosis. The kidneys showed poor cortical demarcation, and nothing abnormal was seen in the prostate gland. Hyperplastic marrow, which was gelatinous and plum-coloured in parts, was found in the sternum, ribs, and lumbar vertebræ. Histological examination confirmed the diagnosis of multiple myelomatosis. The kidney sections showed nephrosclerosis and myelomatous nephropathy.

Discussion

These cases illustrate two points:

(1) When multiple myelomatosis is considered it cannot be excluded on a single biopsy of sternal marrow; further specimens of marrow should be obtained from any other accessible bone.

(2) Though abnormal serum-protein levels are usual in multiple myelomatosis, normal levels and the absence of an increased globulin component on electrophoresis do not exclude multiple myelomatosis.

Another unusual feature, present in case 1, was the almost entire absence of γ-globulin. Griffiths and Brews (1953) described 20 cases of multiple myelomatosis, in 4 of which an increase in a globulin fraction migrating between the albumin and β fractions was found. The serum-albumin level was lowered and the γ-globulin absent in some of their cases. In the present case 1 no abnormal component was seen, the α and β fractions being within normal limits.

This raises the question of where the abnormal globulin originates in multiple myelomatosis. Bing (1940) found a correlation between an increase of plasma cells and high serum-globulin levels in both man and certain animals, and thought that plasma cells produced the globulin. Waldenström (1944) thought that hyperglobulinæmia was the primary condition in multiple myelomatosis, and that plasma cells only store the protein (cf. lipoidoses).

Aas (1949) reported a case, with a low-serum-globulin level of 1·2–1·8 g. per 100 ml. in which 50% of the marrow contained normally differentiated myeloma cells. He therefore concluded that in his patient there was no quantitative relation between plasma cells and serum-globulin. Lichtenstein and Jaffe (1947) found a correlation in 4 of 8 cases with predominantly large cells in post-mortem histological sections and high serum-globulin levels ranging from 3·4 to 14·0 g. per 100 ml. In neither of these two series was electrophoresis done.

However, Olhagen et al. (1949) studied 16 cases by cytochemical methods and found two distinct types of cells, which they called type A and type B. Type-A cells resembled mature plasma cells and were found in association with an increased amount of β or γ serum-globulin. Type-B cells were larger and less well differentiated and resembled myeloblasts, and in these cases there was no increase in serum-globulin, but Bence Jones protein was found in the urine. Olhagen et al. postulated that the degree of differentiation of the cell determined whether the abnormal globulin was of large or of small molecular weight and hence whether it appeared in the plasma or in the urine. The present two cases support their findings in that in both there were large cells of the myeloma series and a normal serum-globulin level; but Bence Jones protein was absent from the urine in case 1.

Summary

Two cases of multiple myelomatosis are described in which the abnormal cells in the bone-marrow were of the large type and the total serum-globulin level was not increased.

No abnormal component was found in the serum on electrophoresis, but one of the patients had Bence Jones proteinuria.

Our thanks are due to Dr. C. S. Treip, of Central Middlesex Hospital, and Dr. C. C. Bryson and Dr. J. Green, of North West Group Laboratory for their examinations and reports, and to Dr. A. H. T. Robb-Smith, Dr. G. Discombe, and Dr. J. Fielding for their helpful advice.

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EOSINOPHILIC GRANULOMA (HONEYCOMB LUNG) WITH DIABETES INSIPIDUS

L. J. GRANT
M.B. Lond., M.R.C.P.
SENIOR REGISTRAR, LONDON CHEST HOSPITAL; CONSULTANT PHYSICIAN IN CHEST DISEASES, CHELSEA AND FULHAM GROUPS OF HOSPITALS

JEAN GINSBURG
M.A., B.M. Oxfd
RESEARCH FELLOW, SHERRINGTON SCHOOL OF PHYSIOLOGY, ST. THOMAS'S HOSPITAL; LATE HOUSE-PHYSICIAN, LONDON CHEST HOSPITAL

From The London Chest Hospital

THE association of diabetes insipidus with pulmonary lesions of a characteristic type, commonly and somewhat loosely called "honeycomb lung," has been known since the reports of Weidman and Freeman (1924). The term is picturesquely descriptive, but its application to any particular entity is not justifiable. It was originally used in connection with the macroscopic appearances in diffuse cystic conditions of the lung, bronchiectasis both congenital and acquired, bronchiolectasis, and widespread bullous emphysema. More recently it has also been used as descriptive of the radiological appearances not only in these conditions but also in sarcoidosis, scleroderma, tuberous sclerosis, and xanthomatosis, among others.

The first attempt at elucidation and systematisation of the clinical and pathological features of these pulmonary lesions was that of Oswald and Parkinson (1949), who, besides reporting their own cases, reviewed the literature and discussed the processes involved. Subsequently Spillane (1952) reported 4 cases of honeycomb lung associated with diabetes insipidus and discussed the ætiology.

Cunningham and Parkinson (1950) separated a distinct group of cases of pulmonary disease of "honeycomb" type of which only 1 patient had pituitary involvement, and suggested the stages in its development and the mechanism of cyst formation shown by necropsy specimens. Oswald (1952) analysed the condition very fully on the basis of his own work. Nevertheless, the number of recorded examples of the syndrome is so small, and its nature so ill understood, as to justify the reporting of the following case. Moreover, so far as we know, nobody in this country has tried to determine the exact pathological lesion in life by lung biopsy.

Case-report

A man, aged 32, single, who had worked on farms since the age of 14, was referred to the London Chest Hospital in October, 1953, with a three-year history of cough and sputum, polydipsia and polyuria, and increasing breathlessness.

He dated the onset of his symptoms to a short period in 1950, when he worked on a "clover huller" (a machine used for threshing clover in the open). After two weeks' work on this machine he developed a feverish cold and cough, but he continued to use the huller for a further six weeks, after which he returned to other farm work. The cough persisted and produced a little mucoid sputum, and about this time he noticed excessive thirst and frequency of micturition both nocturnal and diurnal. During 1951 he gradually became breathless on exertion, at first on heavy lifting only, and later when dealing with routine farm work. Cough and sputum became more troublesome during the following winter, and in March, 1952, miniature radiography of his chest during a public survey led to his being referred to Chelmsford Hospital.

The chest radiograph at that time showed a reticular pattern throughout both lungs, more definite in the right upper and left lower zones; in places the reticular pattern was very open, giving the appearance of multiple small cysts. The hila appeared normal. Repeated examinations of the sputum showed no tubercle bacilli but a heavy growth of penicillin-sensitive *Staphylococcus aureus* and a few yeasts. A course of penicillin was given with no effect on the cough, or on the dyspnœa which continued to trouble him, though he was able to remain at work. Thirst and polyuria remained unchanged throughout this period, but his respiratory symptoms increased and were the most distressing features of his illness. In August, 1953, he had a small hæmoptysis, and in November he was admitted to the London Chest Hospital.

No relevant past or family history was obtained. He was a moderate smoker of cigarettes.

Examination

He was well built and muscular, with a smooth skin and a florid complexion, said to be familial. He had scanty facial hair and a moderate amount of pubic hair. His external genitalia were normal. He had no cyanosis, orthopnœa, or clubbing, and no enlarged lymph-glands. Clinically there was slight pulmonary emphysema and occasional sibilant rhonchi were heard. His blood-pressure was 120/70 mm. Hg, and his heart and peripheral vessels were normal. Nothing abnormal was found in his abdomen and central nervous system.

Investigations

Blood examination showed Hb 70%, white cells 19,000 per c.mm. (polymorphs 80%, eosinophils 5%, 950 per c.mm.), and erythrocyte-sedimentation rate (E.S.R.) 34 mm. in one hour (Westergren).

Serum chemistry.—The blood-urea level was 20 mg. per 100 ml., blood-sodium 320 mg., blood-potassium 17 mg., blood-calcium 11·2 mg. A Kahn test was negative. The plasma-protein level was 6·7 g. per 100 ml. (albumin 4·2 g., globulin 2·5 g.). The blood-cholesterol level was 150 mg. per 100 ml. Thymol turbidity 2. Alkaline phosphatase 17 King-Armstrong units. Fasting blood-sugar 100 mg. per 100 ml.; half an hour after glucose 110 mg; one hour after glucose 90 mg.

Sternal marrow.—No abnormal cells were found.

Sputum.—Culture produced *Hæmophilus influenzæ*, *streptococcus viridans*, and *Neisseria catarrhalis*. Monilia was obtained from several specimens, but deliberate cultural methods for fungi failed. No acid-fast bacilli were found in the sputum, which was streaked with blood on numerous occasions.

Urine.—Daily output 350–450 oz. A morning specimen of urine contained no protein, casts, or cells. 17-ketosteroids 15·1 mg. per twenty-four hours (estimated on twenty-four-hour collection of urine after the administration of 'Pitressin').

Fluid-deprivation test.—114 oz. of urine was passed during seventeen hours' abstention from drinking. The specific gravity of the final specimen was 1·000.

Nicotine test.—Diuresis was not inhibited by intravenous injection of nicotine base 1·5 mg.

Radiography.—In the *chest radiograph* (fig. 1) the reticular pattern was coarser and more defined than in the 1952 film, and the cyst formation in the right upper lobe more manifest. Obvious cysts were now present in the left upper lobe. *Tomograms* showed cystic changes throughout both lungs, some cysts being as much as 3·5 cm. in diameter. Numerous smaller cysts were also present, especially in the right lower lobe, where they appeared smaller; around them the tissue

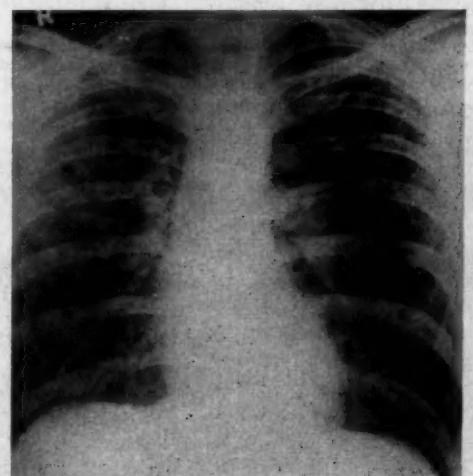

Fig. 1—Reticular pattern and cysts in lungs on admission.

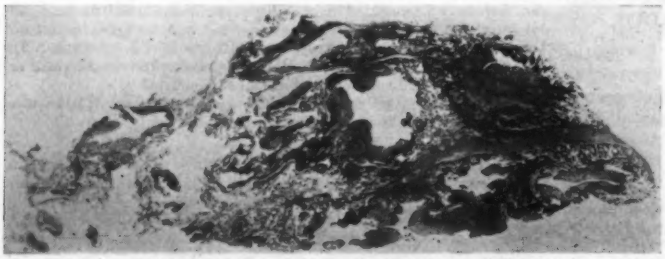

Fig. 2—Whole of biopsy specimen of lung, showing thickened interlobular septum, cysts, and granuloma (× 3½).

appeared consolidated. *Bronchography* of the right lung showed a normal bronchial pattern and no evidence of bronchiectasis. In the left lung the peripheral bronchi were incompletely filled; otherwise the bronchial pattern was normal. Radiography of the *skull* showed normal bony structure and normal sella, and of the *long bones* no evidence of cysts.

Vital capacity 2600 c.cm.

Mantoux negative to 1 in 10.

Biopsy

Left scalene lymph-node biopsy on Nov. 6, 1953, showed normal architecture and no abnormal deposits.

Right lung biopsy (Mr. Peter Jones) on Nov. 25, 1953, was done through a short lateral thoracotomy, the 5th intercostal space being entered. Pleura appeared perfectly normal. Exposed lung was remarkably free from pigmentation, and no emphysematous blebs or bullæ were noted on the surface. Numerous nodules were palpable in the exposed areas of upper, middle, and lower lobes. It was impossible, through the small incision, to ascertain the state of the lymphatic nodes. A 2-inch piece was taken off the right lower lobe, and adequate closure effected.

On this specimen Dr. K. W. F. Hinson reported "The pleura is normal but there is some fibrous thickening of an interlobar septum; many groups of alveoli are also normal, but there are cystic spaces lined by granulomatous tissue (figs. 2 and 3) This has developed in relation to bronchioles, and, indeed, their epithelium forms a small part of the lining of some spaces; the granulomatous tissue is heavily and diffusely infiltrated by eosinophils (fig. 4). There is no necrosis or giant-cell formation, and foam-cells are not present. However, occasional lymph follicles do persist. The appearances are not those of sarcoidosis but are most suggestive of an eosinophilic granulomatous lesion in an early stage leading to cyst formation."

Progress and Treatment

Nov. 29, 1953.—Left spontaneous pneumothorax, treated by continuous suction, with complete re-expansion.

Patient discharged at own request for Christmas.

Jan. 13, 1954.—Treatment with pitressin 10 units (0·5 ml.) b.d. was begun; intake and output reduced; 122–180 oz. of urine was passed in twenty-four hours.

Fig. 3—Edge of cyst with granuloma projecting into it (× 27).

Jan. 23.—Pitressin discontinued. Intake and output immediately reverted to previous high levels.

Jan. 26.—Corticotrophin treatment begun: 25 units six-hourly. Initial fall in both intake and output (200–280 oz. of urine passed daily).

Feb. 5.—Recurrence of thirst, associated with high intake and output as before. E.S.R. 10 mm. in one hour (Westergren). Weight increased from 10 st. 8 lb. to 11 st. 8 lb.

Definite subjective improvement during this time. Exertional dyspnœa much reduced, but no convincing radiological improvement or change in vital capacity. Increased amounts of sputum, often bloodstained, brought up with ease, especially on posturing.

Feb. 26.—Corticotrophin reduced to 30 units b.d.

March 5.—Corticotrophin discontinued.

March 6.—Treatment with 'Pituitrin' snuff begun. Intake and output fell (140–230 oz. urine passed daily).

March 13.—Weight on discharge 11 st. 3½ lb. Discharged home on pituitrin snuff, and told to attend as an outpatient every three months. At last attendance, on Dec. 17, 1954, he claimed that he was much better and considerably less dyspnœic. Clinically and radiologically there had been no deterioration.

Discussion

Honeycomb lung, as described by Oswald and Parkinson (1949) is characterised by "thin-walled cysts, distributed uniformly throughout the substance of both lungs,

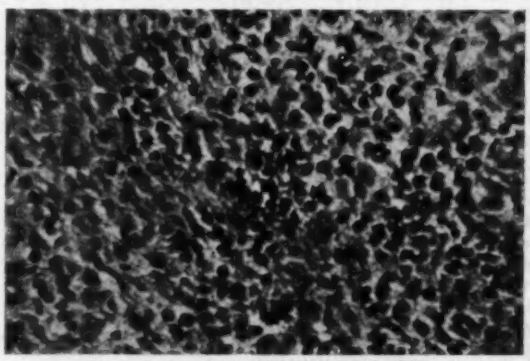

Fig. 4—Profuse eosinophil infiltration (× 500).

varying in size up to a maximum of one centimetre in diameter." The diagnosis is radiological and may be tentatively made from a straight postero-anterior film, but it needs confirmation by tomography. The cysts are particularly well seen after a spontaneous pneumothorax, which is a common complication. Bronchograms are normal; presumably the small size of the bronchial communications prevents iodised oil from entering the cysts, as histological examination shows that some of them, at any rate, are in communication with the bronchi.

The presence of polyuria and polydipsia does not justify a diagnosis of diabetes insipidus without further investigation. It is important to exclude a functional polydipsia and to show that the symptoms are due to a deficiency of the antidiuretic hormone resulting from some lesion of the supraoptico-hypophyseal pathway. The fluid-deprivation test and the nicotine tests (Chalmers and Lewis 1951) are now regarded as essential steps in establishing the diagnosis.

The simultaneous occurrence of both pulmonary and pituitary lesions should not be regarded as fortuitous, and a unifying pathological basis should always be sought. Sarcoidosis, tuberous sclerosis, eosinophilic xanthomatous granuloma (normocholesterolæmic essen-

tial xanthomatosis), and diffuse cystic granuloma of the lungs have all been suggested by various workers as ætiological factors producing the combined lesion.

Sarcoidosis

Sarcoidosis is known to be a cause of diabetes insipidus (Spillane 1952), though generally in association with other lesions, such as uveoparotitis and skin nodules. Diffuse pulmonary reticulation is common, but Oswald (1952) doubts if a true "honeycomb lung" ever occurs in this condition.

Tuberous Sclerosis

Tuberous sclerosis has been reported as a cause of honeycomb lung, but has not yet been shown convincingly to cause diabetes insipidus (Dawson 1954). The combination of honeycomb lung and diabetes insipidus in this condition has been reported in 2 cases (Ackermann 1944, Berg and Zachrisson 1941), but, as Spillane (1952) says, the evidence of tuberous sclerosis in either case is scanty.

Eosinophilic Xanthomatous Granuloma

Normocholesterolæmic essential xanthomatosis has only relatively recently been recognised as the cause of lesions in single organs or in various combinations throughout the body. There is considerable confusion of nomenclature, and distinct entities have been described without the recognition of their common pathological basis, and to some extent this confusion persists today. Thus, for example, the Hand-Schüller-Christian syndrome which is now recognised as belonging definitely to the xanthomatoses, was thought originally by Hand (1893) to be tuberculous and by Christian (1920) to be due to a disturbance of pituitary function. Many years later Hand reviewed his original material and recognised the xanthomatous nature of the lesions he had studied (Farber 1944).

The first attempt at pathological systematisation was by Rowland (1928), whose contributions were threefold—an accurate description of the microscopic lesions in the Hand-Schüller-Christian syndrome, a recognition that the syndrome was primarily a lesion of the reticulo-endothelial cells, and an explanation of the cellular hyperplasia and xanthoma formation in terms of the organism's response to an excess of circulating cholesterol. Rowland's description and his concept of the special rôle of the reticulo-endothelial system are still accepted. His views on the origin of the xanthomatous deposits, however, have been modified by the work of Thannhauser and Magendantz (1938) and Thannhauser (1950), who have shown that the serum-cholesterol level is normal both in the Hand-Schüller-Christian syndrome in particular and in eosinophilic xanthomatous granuloma in general. These workers have also shown that the tissue-cholesterol level is raised in the xanthomatous phase, being ten to twenty times that in normal tissue. The exact mechanism of deposition of the cholesterol is not clear; whether it is due to increased production of cells, decreased excretion or breakdown, or (as Thannhauser suggests) the result of "an inherent metabolic potentiality" of the xanthoma cells, has not been determined.

The histology of the bone lesions was more fully described by Fraser (1935)—though he too regarded hypercholesterolæmia as an essential feature—and by Jaffe and Lichtenstein (1940), who recognised the granulomatous nature of the solitary bone lesions but did not associate them with the generalised type of lipoid granulomatosis.

Farber (1941), Farber and Green (1942), and Mallory (1942), on the basis of their own pathological studies and in view of the numerous intermediate forms described, linked the fulminating Letterer-Siwe disease with the more chronic Hand-Schüller-Christian syndrome and the relatively benign eosinophilic granuloma of bone, suggesting that these were only variants of the same basic disease process, the microscopic lesion being the same in all cases, "an inflammatory histiocytosis." The characteristic clinical syndromes were thus incidental and not essential features, depending rather on the particular organs involved and the speed of development of the process than on any fundamental difference. The factors determining the localisation and the progression of the disease are, however, unknown. Indeed Lichtenstein (1953) has suggested the use of the term "histiocytosis X" for the process, to emphasise our ignorance of its fundamental pathological nature.

The natural history of the lesions has been elucidated microscopically by Engelbreth-Holm et al. (1944), who also provided further evidence of a gradual transition from the solitary bone lesion to multiple foci, with evidence of diabetes insipidus, disturbances of growth, and involvement of lungs. These workers divided the process into four stages:

(1) A hyperplastic proliferative phase of similar appearance to a reticulosis, with well-marked histiocytic response and eosinophilic infiltration. This phase was "lipoid-free," and foam-cells were absent.

(2) A granulomatous phase with increased vascularity and formation of fibrils. Cellular infiltration was still conspicuous, and in addition there were characteristic giant-cells and some lipoid phagocytosis.

(3) The xanthoma proper, with characteristic nests of xanthoma tissue and foam-cells.

(4) A healed fibrotic phase, in which eosinophils were absent and evidence of the original cellular lesion might be scanty.

These phases were not rigidly demarcated, and all four could be found in any affected tissue at the same time. It is possible, though Engelbreth-Holm et al. do not arrive at this conclusion, that at an early stage the cellular hyperplasia and absence of foam-cells (formerly thought essential for the diagnosis) might obscure the xanthomatous nature of the lesion, and similarly, in the final stage, the fibrosis might mask or even take the place of the original granuloma.

In the published cases in which the diagnosis of eosinophilic xanthomatous granuloma was proved by either necropsy or biopsy, lesions were found in bone, lung, and pituitary in particular, and in numerous other organs (Currens and Popp 1943, Farber and Green 1942, Thannhauser and Magendantz 1938, Thannhauser 1950, and others). The combination of pulmonary and pituitary lesions is described by Dennis and Rosahn (1951), Imler (1946), Parkinson (1949), Rowntree and Poppiti (1954), Spillane (1952, case 3), Teilum (1941), Troxler and Niemetz (1946), and in all these reports the honeycomb appearance of the lung is mentioned.

Diffuse Cystic Granuloma

Diffuse cystic granuloma of the lung was suggested by Cunningham and Parkinson (1950) as a term descriptive of the pathology of their cases and "to permit of an alternative ætiology to xanthomatosis if necessary" (Oswald 1952). They recognised the essential similarity of the histological changes in their cases to those of eosinophilic xanthomatous granuloma but were reluctant to identify them in the absence of further evidence.

Recently, MacDonald and Shanks (1954) have reported 7 cases of honeycomb lung due to xanthomatosis in children—3 diagnosed post mortem, and 4 retrospectively from the hospital records on re-examination of the histology. Comparison of the microscopic lesions in the studies of Cunningham and Parkinson (1950) with those of MacDonald and Shanks (1954) and other undoubted cases of eosinophilic granuloma reveals a remarkably similar, if not identical, picture in all cases. Possibly, therefore, the lesions described by Cunningham and Parkinson (1950) ought to be attributed to xanthomatosis. This has been suggested as the most likely cause of honeycomb lung in childhood, and it may well be true also of adults, especially if diabetes insipidus is present and sarcoid can be excluded. This hypothesis may explain cases of hitherto doubtful ætiology, such as those of Oechsli and Miles (1934), Giraud et al. (1939), and others. Lewis and Smart (1951), discussing a similar case (which we have had the privilege of studying recently), came to the same conclusion on clinical grounds.

Value of Biopsy

The demonstration of the therapeutic effect of corticotrophin in sarcoidosis (Sones et al, 1951, McClement et al. 1953, Israel et al. 1954, Shulman et al. 1952) and other granulomatous conditions (Robbins and Lyons 1953) has made it important to determine the exact pathological nature of the lesion in a case such as ours. The importance of histological proof has indeed been emphasised by Scadding (1952) as "the only objective method of supporting a clinical diagnosis of sarcoidosis." The absence of enlarged superficial lymph-nodes in the present case suggested that biopsy of a scalene node —a relatively simple procedure which may provide information on the condition of the mediastinal nodes without opening the chest (Daniels 1949, Shefts et al. 1953, Carstensen et al. 1954)—might confirm the diagnosis. This, however, proved unhelpful. The liver is often but not always involved in sarcoidosis (Scadding and Sherlock 1948); so we decided to obtain histological material from the lung, in which many lesions were undoubtedly present. Needle biopsy was thought to be unreliable, and possibly dangerous in view of the high incidence of spontaneous pneumothorax in this disease. The risks of a small thoracotomy were held to be small enough to justify open lung biopsy.

The histological findings were those of an eosinophil granuloma. No foam-cells were seen in the specimen, but their absence does not exclude the diagnosis. The striking feature was the active nature of the process. This was not a burnt-out lesion, there being definite evidence of histiocytosis, granuloma formation, and eosinophilia. It therefore appeared feasible to arrest this condition by active therapy.

Treatment

The bone lesions of eosinophilic xanthomatous granuloma are known to respond well to radiotherapy (Farber and Green 1942, Currens and Popp 1943, and others). Radiotherapy has also been applied to the pulmonary lesions, with reports of clinical improvement and radiological clearing in some cases (Weinstein et al. 1947, Imler 1946) and no effect in others (Parkinson 1949). Irradiation of the pituitary gland relieved the polyuria in one case (Imler 1946) but was ineffective in others (Hilton and Eden 1941, Parkinson 1949). It seemed, however, to be somewhat hazardous to subject the lungs to a process which might induce further fibrosis as part of its intrinsic effect on the lung parenchyma. That the lesions may heal spontaneously, apparently by resolution and without fibrosis has been noted by Jaffe and Lichtenstein (1944) in bone and by Lackey et al. (1952) in the lung. Considerable fibrosis and cyst formation were already present: these lesions could obviously not be reversed, but it was reasonable to hope that treatment with corticotrophin might reduce the cellular infiltration and thus halt the progress of the disease temporarily or even permanently.

It is difficult to assess the results of treatment with corticotrophin in the present case. Initially the eosinophil-count fell, but after ten days the increased urinary output (presumably following a sodium diuresis) and raised eosinophil-count suggested that some resistance had possibly developed to corticotrophin. Using simple tests we could not find any objective evidence of improved pulmonary function, nor was there any marked radiological clearing. Perhaps corticotrophin was not given for long enough and the disease when first seen by us was so far advanced as to preclude any radical change in pulmonary function. The patient, however, claimed that his dyspnœa was considerably reduced and his sputum less tenacious and easier to expectorate; and further deterioration may well have been prevented—as shown by the unchanged radiological appearances over the following year and his general well-being and reduced exertional dyspnœa. It is also possible that corticotrophin given at an earlier stage—e.g., at the onset of symptoms in 1950—might have done more good.

Since treating this case we have come across a few reports of the use of corticotrophin in eosinophilic xanthomatous granuloma. In one of these definite clearing of the pulmonary infiltration, but with some residual fibrosis, was observed (Lackey et al. 1952). In another an initial course of cortisone produced a remission in a child, aged 17 months, with Letterer-Siwe's disease, and two subsequent courses appear to have halted a process hitherto regarded as generally fatal (Cox 1953). The child is alive and well and has had no cortisone for two years (Moncrieff 1954). These two very encouraging results suggest that corticotrophin should be tried early in this condition.

Summary

A case of honeycomb lung associated with diabetes insipidus is described, and the ætiological factors are discussed.

Lung biopsy showed that the lesion was an eosinophilic granuloma.

Where sarcoidosis can be excluded, many such cases may be examples of normocholesterolæmic xanthomatosis.

The therapeutic possibilities are discussed and the use of corticotrophin is suggested.

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DIFFUSE INTERSTITIAL PULMONARY FIBROSIS

THE HAMMAN-RICH SYNDROME

J. C. SLOPER
M.D. Camb., M.R.C.P.
SENIOR LECTURER IN PATHOLOGY,
BERNHARD BARON INSTITUTE OF PATHOLOGY

EIRIAN WILLIAMS
M.D. Lond., M.R.C.P.
SENIOR MEDICAL REGISTRAR
THE LONDON HOSPITAL

Hamman and Rich (1944) recorded four examples of a condition previously unrecognised. The dominating symptom was progressive dyspnœa, leading to death from respiratory or cardiac failure; and necropsy revealed in all cases an unusual variety of diffuse interstitial pulmonary fibrosis. Further examples have since been published but only one in detail from this country (Heppleston 1951). The following is an additional case.

Case-report

A man, aged 37, was admitted to hospital on April 10, 1954.

History

For 6 years he had noticed increasing shortness of breath on exertion: 12 months before admission he was unable to walk more than 100 yards without wanting to rest, and was forced to give up work. He also complained of palpitations when breathless, with, more recently, attacks of dimness of vision and light-headedness. An unproductive cough occurred in paroxysms, and, though at first it disappeared for periods of many weeks, it was later persistent and very distressing. 7 months before admission he was rested in hospital for 3 weeks but remained very breathless despite treatment with digitalis, and for 3 months he had been almost confined to a chair. There had been no swelling of the ankles or attacks of wheezing, but he had recently complained of a gnawing pain in the upper chest and had lost 10 lb.

Previous illnesses included mild whooping-cough, measles, and chickenpox in early childhood, and dysentery and infective hepatitis during war service in the Middle East. For 20 years his occupation had been largely sedentary, as a tester of telecommunications, and he had never been exposed to harmful dusts. Both his parents suffered from bronchitis but his only brother was well.

Examination

He was well nourished and afebrile, moderately dyspnœic at rest, and slightly cyanosed. There was slight clubbing of the fingers; the respiration-rate was increased (25–30 per min.), and breath-sounds were vesicular, with a few scattered fine inspiratory crepitations. The pulse was regular, rate 80 per min.; the jugular venous pressure was not raised, and there was no demonstrable œdema; the apex-beat was impalpable, but there was a forcible impulse in the precordium. A soft systolic murmur was audible in the mitral area and an additional sound in early systole loudest to the left of the sternum. The pulmonary second sound was split but not accentuated, and the blood-pressure was 130/80 mm. Hg.

Investigations

A Mantoux test (dilution 1/1000) was positive, the blood Wassermann reaction negative, and hæmoglobin, white-cell count, and plasma-protein estimations were normal. A chest radiograph on April 12 showed fine mottled opacities on a reticular background in both lung fields with doubtful evidence of cardiac enlargement; radiographs of the hands and feet were normal. An electrocardiogram showed the changes of right ventricular preponderance, and on April 15 a biopsy from the lower lobe of the left lung revealed pathological changes subsequently demonstrated throughout the lungs at necropsy.

Progress

He became increasingly dyspnœic and cyanosed, and signs of congestive cardiac failure in the form of œdema, elevation of jugular venous pressure, and hepatic enlargement appeared. There was no response to treatment with bed rest, digitalis, and mercurial diuretics, though he obtained some symptomatic relief from oxygen. Fever and purulent sputum during the 2 weeks which followed the lung biopsy responded to treatment with penicillin, but paroxysms of coughing became more frequent and prolonged, and latterly often gave rise to syncopal attacks which also occurred spontaneously. He finally became extremely distressed (respiratory rate 40 per min.) with tachycardia (rate 120 per min.), and he died suddenly during the 5th week of admission.

Necropsy

Heart-failure. Right ventricular hypertrophy. Idiopathic diffuse interstitial fibrosis of lungs.

Both *lungs* were shrunken (left 19 × 11·5 × 4 cm.; right 20 × 14·5 × 5 cm.), but of normal shape. There was no scarring, save for extensive fibrous and fibrinous adhesions at the site of a biopsy taken from the left lower lobe, and a small area on the medial surface of the right lower lobe. The glistening pleural surface showed a uniform dimpled or nodular pattern (fig. 1), the nodules averaging 0·3 cm. in diameter by less than 0·1 cm. high. On section some nodules were cystic and filled with air, and some grey and solid. They also formed part of the tough leathery reddish-grey spongy cut surface of the lungs. Throughout the cut surface there were irregularly distributed dilated alveoli (0·2–1 cm. in diameter), both deep and peripheral in distribution, and most conspicuous in the lingula and right middle lobe. Areas of grey-white consolidation were also irregularly distributed and were mostly small (up to 0·4 cm. in diameter), although there was a larger area (1·5 × 0·9 cm. in diameter) beneath the pleura of the apical segment of the right upper lobe. There was no evidence of tuberculosis.

The hilar, parabronchial, and paratracheal *lymph-glands* were œdematous and greatly enlarged (up to 5·5 × 1·7 × 1·5 cm.), their cut surface reddish-grey and studded with follicles. Lymph-glands elsewhere were of normal size and largely replaced by fat. The *heart* was of normal weight (322 grammes) but showed moderate right ventricular hypertrophy (up to 0·6 cm. thick). There were flecks of atheroma in the *pulmonary arteries*. The malpighian bodies were normally conspicuous in the cut surface of the *spleen*. The femoral *red marrow* was normal.

Scale in cm.

Fig. 1—Medial aspect of right lung, to show glistening dimpled pleural surface.

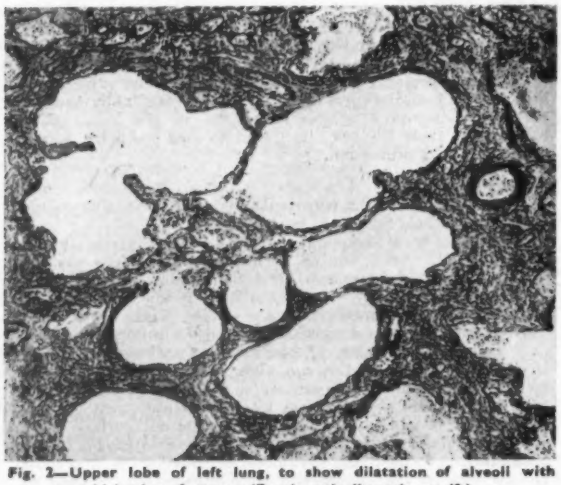

Fig. 2—Upper lobe of left lung, to show dilatation of alveoli with thickening of septa. (Foot's reticulin stain. × 48.)

Microscopy

Numerous sections from many parts of both *lungs* showed that normal lung tissue was entirely replaced by numerous dilated alveolar spaces with thickened septa; by collapsed similar alveoli; and by condensed pulmonary tissue in which alveoli were no longer recognisable. Throughout there was an excess of connective tissue, composed mostly of reticulin but in part of mature collagen. The dilated alveoli (or infundibular spaces) were irregularly distributed (fig. 2). They showed in their walls congested vessels, early cellular collagen tissue, focal fragmentation of the elastica, and numerous reticulin fibres. Some of the alveolar spaces had no apparent cellular lining, but in many areas they were lined by cubical, columnar, or in places flattened and somewhat stratified epithelium. There was conspicuous desquamation of this epithelium, while some cells showed nuclear pyknosis. In the alveoli there were macrophages containing free iron (Perl's stain) and others containing sudanophil lipoid (in frozen sections taken from five different areas). Intra-alveolar œdema was conspicuous, while, focally, streaks and layers of fibrin were deposited on the alveolar wall, staining purple with phosphotungstic acid hæmatoxylin, and black with Gomori's reticulin technique. Many alveoli contained mucinous material which was faintly basophilic, and staining strongly with the periodic-acid-Schiff technique.

A great part of the lung was occupied by collapsed and condensed alveoli, the pattern of which was difficult to discern. There was the same moderate excess of collagenous tissue, interspersed with abundant reticulin. In most areas there was diffuse infiltration by lymphocytes and plasma-cells. Collagen was most conspicuous focally beneath the pleura.

The *bronchi* and *bronchioles* retained in general their normal mucosa and submucosal elastic fibres: but many showed an excess of collagen in the submucosa, and in a few there was slight focal infiltration of the mucosa by polymorphonuclear neutrophil leucocytes. Peribronchial smooth-muscle fibres were conspicuous and probably excessive. Some vessels were narrowed by intimal fibrosis, but most were normal. There was no deposition of amyloid or fibrinoid material in the connective tissue. The periodic-acid-Schiff, Dominici, and Ziehl-Neelsen techniques did not demonstrate micro-organisms in the interstitial tissue of the lung.

Discussion

An analysis of previous case-reports of the Hamman-Rich syndrome shows that progressive shortness of breath, and sooner or later a cough (usually non-productive and paroxysmal), are the only constant symptoms, although chest pain and syncopal attacks are not uncommon in the later stages. There is also marked tachypnœa: this is to be expected in association with severe pulmonary fibrosis (Arnott 1955). In our patient paroxysms of coughing were particularly distressing and prolonged and often ended with sudden unconsciousness. Terminally there is severe dyspnœa with cyanosis, and often clubbing of the fingers, but signs in the chest are remarkably scanty, and fever is not a feature except when there is secondary infection in the lungs. There is usually a sinus tachycardia with evidence of cor pulmonale, and congestive failure occurs in the majority of cases. In the remainder sudden death can be due to an exacerbation of severe respiratory insufficiency. The duration of symptoms in our patient was 6 years, and in the cases on record it has ranged from 31 days (Hamman and Rich 1944) to 7 years (Spain 1950).

Radiographic changes may at first be insignificant (Heppleston), but are usually obvious, and have been variously described as a hazy appearance, a reticulation, or a diffuse mottling, as in our patient. They may be seen initially in the apices of the lungs (Eder et al. 1945) or in the bases (Beams and Harmos 1949, Potter and Gerber 1948), but eventually become generalised.

This syndrome and its accompanying radiographic appearances are obviously not distinctive, and antemortem diagnosis can finally be achieved only with the aid of lung biopsy. In the differential diagnosis, however, other more easily recognised conditions can first be ruled out. Thus, rapidly progressive dyspnœa may be due to lymphangitis carcinomatosa or miliary tuberculosis (Eder et al. 1945); and, when symptoms extend over a period of years, sarcoidosis, the pneumoconioses, and emphysema need to be considered. Rarer conditions include the various forms of honeycomb lung (Oswald and Parkinson 1949) and the collagenoses (Shuford et al. 1953). Scadding (1952) reviewed the chronic lung diseases which give rise to diffuse nodular or reticular radiographic shadows and referred briefly to one example of diffuse idiopathic pulmonary fibrosis. Differentiation from idiopathic pulmonary hypertension is not likely to be difficult, for in this condition the peripheral lung fields are abnormally clear, although they may become obscured by pleural effusions, pulmonary congestion, or low-grade inflammation (Brill and Krygier 1941).

The pathological changes in our case conformed closely with those originally enumerated by Hamman and Rich. These workers stressed the presence of (1) "an unusual type of inflammation"; (2) an eosinophil infiltration; (3) the absence from lesions of stainable bacteria; (4) a diffuse and progressive interstitial fibrosis; (5) "enlargement of the alveolar lining epithelial cells"; (6) necrosis of these and the bronchiolar epithelium; (7) œdema and fibrin deposition in the alveolar walls; and (8) the deposition of a hyaline membrane (elsewhere referred to as fibrinous) lining the alveoli. An analysis of the original four cases also reveals that emphysema (9) and alveolar destruction (10) were conspicuous. Beyond a slight and variable intimal thickening the pulmonary vessels were normal but right ventricular hypertrophy was usual.

Now that a number of cases have been reported it is possible to qualify these criteria. Thus eosinophil-cell infiltration was inconstant in the original series and has rarely since been stressed. Again, certain features such as fibrin deposition and intra-alveolar membrane deposition are well recognised as terminal changes in heart-failure from a variety of causes (Peabody et al. 1951), and are therefore unlikely to be of great diagnostic significance in the Hamman-Rich syndrome.

There are however three essential abnormalities: namely (1) "the unusual type of the inflammation," this including the absence of stainable bacteria; (2) the lining of many alveoli by cubical epithelium (i.e., so-called alveolar-cell metaplasia); and (3) diffuse interstitial fibrosis. Little specificity can be claimed for alveolar-cell metaplasia, for this change in minor degree is not uncommon in chronic inflammations of the lung. On the other hand, the extent of this metaplasia in the Hamman-Rich syndrome may, as in our case, be remarkable. Indeed, in one instance there has been reported

an associated alveolar-cell carcinoma (Callahan et al. 1952). As for the diffuse interstitial fibrosis, this is the characteristic feature of the disease; yet few authors have defined its exact nature—i.e., the proportion of reticulin present as opposed to collagen. The presence of a great excess of reticulin was first noted by Heppleston, but from previous descriptions, particularly those in which a fibroblastic proliferation has been emphasised, it seems to us that a similar deposition of immature connective tissue may have been present in the majority of cases. This feature clearly differentiated our case from scleroderma and the known pneumoconioses. The third feature, "the unusual nature of the inflammation," is the most difficult to define. Hamman and Rich excluded specifically the well-marked intra-alveolar organisation so characteristic of organising lobar pneumonia, although this change was seen in some degree in one of their cases. Again, they excluded the severe cellular infiltration of interstitial bronchopneumonia: and yet, in the most detailed of the original case-reports they noted the presence of areas of fairly intense inflammation, while in their second case there were small foci of terminal pneumonia.

The important distinction appears to lie in the extent and distribution of the inflammation, which, as in our case, is essentially interstitial and diffuse, is not obviously peribronchial, and usually involves the entire substance of both lungs.

In our case two additional changes were conspicuous and these we would regard as important accessory abnormalities. The first was the presence of emphysema, a feature noted in most cases of the disease. In our case this emphysema was particularly definite, but, although reminiscent of the "honeycomb" lungs described by Oswald and Parkinson (1949), did not show a comparable degree of alveolar dilatation. Hamman and Rich (1944) attributed the emphysema to terminal bronchiolar stenosis, a change we failed to demonstrate; an equally plausible explanation in our case is that the emphysema was compensatory. A second feature of our case was an apparent excess of smooth muscle, and this has been noted in the Hamman-Rich syndrome in other cases than our own (Beams and Harmos 1949, Cox and Kohl 1952, Rubin et al. 1952). Curiously enough in these cases, and probably in several others (Golden and Bronk 1953, Callahan et al. 1952, Potter and Gerber 1948), the lungs did not show the diffuse pleural fibrosis noted in the original description of the disease, but shared in varying degree the smooth glistening dimpled reticular pleural surface, which was so striking in our case. This feature may serve to differentiate a subgroup of the Hamman-Rich syndrome.

The ætiology of this syndrome is unknown. Inflammatory changes are the most conspicuous feature and have led some to postulate chronic pulmonary lymphœdema (Callahan et al. 1952), and others impaired resolution (Golden and Tullis 1949) following attacks of atypical viral pneumonia.

Summary

A man, aged 37, died after shortness of breath of 6 years' duration. Necropsy revealed diffuse interstitial pulmonary fibrosis of the type described by Hamman and Rich.

We are grateful to Dr. Kenneth Perry and Prof. Dorothy Russell for permission to publish this case and for their helpful advice and criticism.

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TOXIC PSYCHOSIS WITH NEUROLOGICAL FEATURES DUE TO METHYLPENTYNOL

EDWARD MARLEY
M.D. Camb., M.R.C.P.E., D.P.M.
REGISTRAR, THE BETHLEM ROYAL AND MAUDSLEY HOSPITALS, LONDON

METHYLPENTYNOL ('Oblivon') is an unsaturated aliphatic carbinol described by Margolin et al. (1951). It has been given daily by mouth in the recommended dosage of 0·1–1·5 g. for as long as six months without any undesirable side-effects (Chevalley et al. 1952, Margolin et al. 1951), but Glatt (1955) refers briefly to the development of a confused and highly emotional state, with slurring of speech and ataxia, in alcoholics after taking up to twenty capsules (each of 250 mg.) daily for two to three days. Cares et al. (1953) reported a death after an overdose of 4·5–6·0 g., and Lovelace and Roith (1955) report an attempted suicide with a combination of methylpentynol and 'Persomnia' (carbromal and bromvaletone). Recovery after doses of 8·75 g. and 10·0 g. of methylpentynol have been noted respectively by Lemere (1952) and Brown and Ellis (1955). Perlman and Johnson (1952) and Perlman et al. (1953) have shown that methylpentynol does not accumulate in the human body.

Case-report

An unmarried girl, aged 27, was referred from work first to her general practitioner on account of distractibility, overactivity, and garrulity. She was prescribed quinalbarbitone sodium gr. 3 nocte, but when seen again a week later was drowsy and behaving in an unaccountable and bizarre way. At this stage she was admitted to hospital.

On admission she had dilated pupils reacting sluggishly to light, rhythmic nystagmus on conjugate lateral deviation of the eyes, prominent ptosis, general poverty of facial movement, and dysarthria. She complained of diplopia on lateral gaze. Her gait was ataxic, with a positive Romberg's sign. Rapidly alternating movements were made clumsily, and on the finger-nose and heel-toe tests there was moderate ataxia not compensated for by vision. Although the superficial reflexes were unaltered, the deep reflexes were barely elicitable, being accompanied by generalised hypotonia. Sensation was normal.

In addition, she was paraphasic and obviously had great difficulty in concentrating or attending, being unable to attempt serial sevens. The digit span was five forwards and four backwards, and the patient was quite unable to offer any interpretation of simple proverbs. She was correctly oriented for time, place, and person, but admitted to being disturbed and restless at night through seeing shapes like faces in the air and hearing voices fairly near at hand. There was no evidence, however, of hallucinations during the day, and her mood was one of apathy.

Her urine reduced Benedict's solution, and Rothera's test was strongly positive. The serum-bromide level was below 25 mg. per 100 ml., and the Wasserman reaction and Kahn's test were negative.

Progress.—Within four days of admission the patient's neurological state, mental state, and urine had become entirely normal. She gave a fair retrospective account of the episode but complained of being unable to recall some of the incidents. She confessed to having taken about fifty capsules of methylpentynol in the two weeks before admission to

DR. SLOPER, DR. WILLIAMS: REFERENCES—*continued.*

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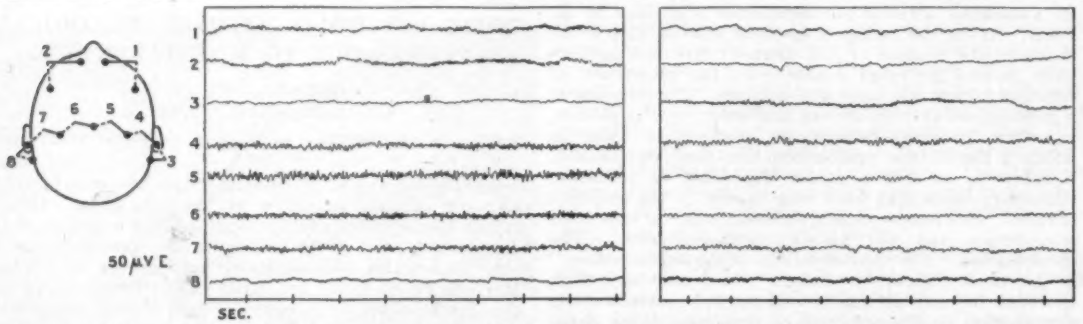

Electro-encephalogram from anterior portion and convexity of head: left-hand tracings (during intoxication) show rapid activity in frontal and central regions; right-hand tracings (three weeks later) are within normal limits.

hospital; these had been purchased as "confidence pills" without a medical prescription. There were no withdrawal effects after ceasing the drug.

Clinical experiment.—In view of the rapidly reversible action of methylpentynol, the patient volunteered to receive a daily increasing quantity of it under supervision. Accordingly she was prescribed thirty-five capsules (250 mg. each) over the subsequent nine days, the largest daily dosage being 1 g. b.d. This dosage led to no more than an initial euphoria succeeded by somnolence and associated with slight ataxia. Methylpentynol was then withheld for two days, after which she was given 1 g. t.d.s.; and within twelve hours of the last dose she presented the same clinical picture as on admission, including nystagmus, ptosis, dysarthria, ataxia, glycosuria, and acetonuria. Once more there was impairment of attention and concentration, with reduction of the digit span, and the patient was hallucinated at night.

Electro-encephalography at the height of the intoxication revealed interesting abnormalities (see figure), including well-marked 22–26 cycles-per-second activity in the frontal and central regions; but overbreathing did not give any further information, the responses to photic stimulation being regular and symmetrical. Within four days of withholding methylpentynol the entire clinical picture subsided and further electro-encephalograms taken three weeks later appeared normal (see figure).

Discussion

Methylpentynol is one of the higher alcohols, and acute alcoholic intoxication sometimes presents with nystagmus on conjugate lateral gaze and with dilated pupils that react sluggishly to light (Howells 1952), together with lack of muscular control, reduced attention and retention, slowness of thinking, and distractibility (Mayer-Gross et al. 1954). However, one of the interesting facets of this case is the resemblance to chronic barbiturate intoxication. The protean character of the latter has been emphasised by Weiss (1936), who said it could mimic such diverse conditions as disseminated sclerosis, pseudobulbar palsy, cerebrovascular accident, delirium tremens, and even tabes dorsalis (Ashworth 1928). The physical signs may include ataxia of gait and station, dysarthria, nystagmus, adiadochokinesis, hypotonia, decrease in the abdominal reflexes, and, occasionally, transient ankle clonus and extensor plantar responses (Isbell 1950).

Hassin and Wien (1920) and MacLeod (1920) have reported barbiturate intoxications presenting with features reminiscent of encephalitis lethargica. Although the present patient was drowsy on admission and showed signs referable to the brain-stem, there had been a prior phase of overactivity and loquacity. This might have been merely an exaggeration of the "pleasantly carefree" attitude noted by Bourne (1954) after the administration of methylpentynol or, more important still, a true hypomanic disturbance of mood similar to that described by Curran (1944) in some instances of chronic barbiturate poisoning.

In a discussion on the nature and non-specificity of deliria Wolff and Curran (1935) pointed out that the dysfunction is characterised by being worse at night than during the day, that visual hallucinations are most common, that defects in grasp and failure in sustained attention are prominent, and that, on recovery, recall is usually good. Our patient exhibited all these features, apart from a patchy amnesia for events during the illness, a discrepancy which may be related to the amnesia ascribed by Bourne (1954) to methylpentynol. Curran (1944) believed he could distinguish features specific to drug intoxications, and mentioned that paraphasia is one of the hallmarks of bromide deliria, although in the latter the hallucinations are typically "at a distance." Reduction of digit span is another disturbance arising with drug intoxications, and in an analysis of this defect Hoch (1906) found that the average number of numerals retained was only four.

Apart from the dissentient report by Glatt (1955), most workers emphasise the lack of toxic complications associated with the administration of methylpentynol. Lemere (1952), however, noted that his patient exhibited a temporary phase of severe generalised ataxia during recovery from an overdose of methylpentynol and pentobarbitone sodium; but in his patient the clinical picture was due to a combination of drugs. In the present case and in those of Glatt (1955) the clinical picture was due to methylpentynol alone. It was interesting too, to observe that whereas methylpentynol 1 g. twice daily had little effect apart from drowsiness, 1 g. thrice daily was succeeded, within twelve hours of the last dose, by a replica of the clinical condition on admission.

Abnormality of the electro-encephalogram seems not to have been reported hitherto, for Tükel and Tükel (1952), who examined children sedated with small doses of methylpentynol, remarked that the electro-encephalograms showed no features attributable to methylpentynol. Nevertheless the presence of 20–30 cycles-per-second wave activity in the frontal and, less often, in the parietal region has been noticed after the administration of barbiturates (Brazier and Finesinger 1945, Lennox 1946); but Cohn and Katzenelbogen (1942) suggest that this is not a specific barbiturate effect but may occur also with cyclopropane anæsthesia and during the early stages of deep sleep. In contradistinction, alcoholic intoxication is associated with a progressive decline in cortical frequencies (Hill and Parr 1950), the only inconsistent observation being that of Gibbs et al. (1937), who reported that the first effect of alcohol was to increase the voltage of rhythms around the 20 cycles-per-second frequency.

Summary

A case presenting with the features of a toxic psychosis combined with neurological signs is described.

This appeared to be due to the ingestion of methylpentynol and was reproducible by taking 1 gramme (four capsules) t.d.s. for one day. During intoxication the electro-encephalogram was abnormal.

I wish to thank Dr. A. D. Leigh for permission to publish, and Dr. W. A. Kennedy for his reports on the electroencephalograms.

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HYALURONIDASE IN THE TREATMENT OF EXOPHTHALMIC OPHTHALMOPLEGIA

L. P. E. LAURENT
M.D. Lond., F.R.C.P.
PHYSICIAN

J. W. SCOPES
M.B. Lond.
HOUSE-PHYSICIAN

KING EDWARD MEMORIAL HOSPITAL, EALING

AN intense and often rapidly developing œdema of structures within the orbit explains the protrusion of the globe and the oculomotor paresis in exophthalmic ophthalmoplegia (Brain and Turnbull 1938). The œdema involves the eyelids and the conjunctiva, throwing the latter into red, turgid folds in the more acute examples of this malady. The threat to the cornea is sometimes met by tarsorrhaphy, and in the worst cases Naffziger's transfrontal orbital decompression is finally resorted to. Irradiation of the pituitary gland has been done to inhibit the output of the thyrotrophic hormone thought to be the primary cause of the orbital changes. The results have been disappointing, and radiotherapy has more recently been applied to the orbit itself, with some encouraging results. A Medical Research Council panel (1955) recently reported the result of a trial of cortisone and corticotrophin; they often noted improvement in conjunctival œdema and chemosis, bnt there was very little change in exophthalmos and ophthalmoplegia.

Hyaluronidase is an enzyme which depolymerises hyaluronic acid, the main tissue cement of the mesenchyme. The viscosity of the acid is thus greatly reduced, allowing fluids to flow more readily through intercellular tissues. Within a short period the action is reversed, and hyaluronic acid regains its normal viscosity. This property of the enzyme has been widely applied—e.g., in hypodermoclysis and in increasing the diffusion of local anæsthetics.

It seemed to us that hyaluronidase might be useful in reducing conjunctival and retrobulbar œdema in exophthalmic ophthalmoplegia. We describe here our experience with the only patient we have had the opportunity of treating.

Case-report

A male bath-attendant, aged 53, was admitted on April 24, 1954, with thyrotoxicosis. He gave a history of loss of weight, nervousness, irritability, sweating, and staring prominent eyes; the last symptom he had noticed for only a month. He had the traditional preference for cold weather and had noticed a tremor of his hands. Previously he had always been well, apart from winter attacks of bronchitis, and there was no family history of thyroid or other endocrine dysfunction.

On examination he was well built and looked healthy apart from being noticeably nervous and having staring eyes. His eyes were definitely protuberant, a sign emphasised by retracted lids. His eye movements were full. His palms were warm and moist, and he had a fine tremor of his outstretched fingers. Neither lobe of his thyroid gland was enlarged, but the isthmus was palpable and firm. Radiography showed no retrosternal thyroid. His pulse-rate was 130, with firm and regular beat, and his blood-pressure was 140/90 mm. Hg. There was no clinical cardiac enlargement nor any murmurs. He weighed 8 stone.

Treatment and Progress.—He was treated by rest in bed and with methyl thiouracil 200 mg. b.d. for a week, followed by 100 mg. b.d. with thyroid extract gr. $^1/_2$ b.d. After three weeks in hospital he was greatly improved. Apart from the staring eyes, which were unchanged, his symptoms had disappeared, and he had put on 10 lb. He had lost his tremor, and his palms, though still warm, were dry. His pulse-rate had dropped to 84. He was discharged on methyl thiouracil 100 mg. b.d. with thyroid gr. $^1/_2$ b.d.

Outpatient Treatment.—He was seen as an outpatient at intervals of three weeks during the summer; his toxic symptoms and signs remained well controlled, and he continued to gain weight steadily. His dose of methyl thiouracil was reduced successively to 100 mg. daily and then 50 mg. daily, still with thyroid gr. $^1/_2$ b.d. Meanwhile, however, his eyes began to give him serious trouble. The exophthalmos steadily increased, and œdema of the conjunctiva, first noticed in April, was considerable by July, and his eyes were continuously sore and watering. The upward movements of his eyes were impaired in June, and in July the left external rectus movement was also impaired.

Radiotherapy.—At this stage the patient was referred to Dr. M. H. E. Hulbert at St. Mary's Hospital for radiotherapy to his orbit. Here he was given three doses of 100r to both orbits at weekly intervals. After the third dose the condition of his conjunctiva deteriorated quite suddenly on Aug. 1, 1954, and precluded any further radiotherapy.

Readmission.—On Aug. 8 he was readmitted to the King Edward Memorial Hospital in a sorry state. His conjunctivæ were injected, sore, and grossly œdematous, bulging in all fornices and on the globe itself. The pain was as much as he could bear, his eyes were continuously watering, and he was quite unable to close his eyelids over the raw œdema-

Fig. 1—Condition on Aug. 23, 1954, after three weeks' conservative treatment.

Fig. 2—Condition on Sept. 14, 1954, after four injections of hyaluronidase into conjunctiva of right eye, left eye being treated with cortisone ointment.

tous masses. His general physical state, as regards his thyrotoxicosis, was good.

Conservative Treatment.—He was treated conservatively with frequently changed cold compresses to his eyes, and in the course of the next three weeks there was a slight improvement but it was disappointingly slow. His condition on Aug. 23, after two weeks of this conservative treatment, is shown in fig. 1.

Hyaluronidase Therapy.—On Sept. 3 it was decided to inject hyaluronidase into the œdematous conjunctivæ. For this purpose 'Hyalase' 1000 Benger units was dissolved in 0·4 ml. of 1% procaine and injected directly into the conjunctiva a few minutes after 2% 'Decicaine' drops had been instilled. During the next two weeks he had six such injections into the conjunctiva of the worse eye, the right, the left serving as a control.

Within twenty-four hours of the first injection there was a distinct lessening of the œdema, and with each subsequent injection the improvement increased. His condition on Sept. 14, after four such injections, is shown in fig. 2. The left eye meanwhile was being treated with cortisone ointment and was improving; but, as fig. 2 shows, not so rapidly as that treated with hyalase. The improvement brought to light a fact not previously obvious—namely, that the main part of the conjunctival œdema was on a shelf on the lower part of the globe, and not in the lower fornix (fig. 3).

From Sept. 23 to Oct. 2 six injections were given into the conjunctiva of the left eye, the application of cortisone ointment being discontinued. The improvement again was distinct and persistent. Fig. 4 shows the condition after four injections of hyalase: by this time the œdema was almost entirely gone, and the residual bulging was fibrous and vascular. The last two injections did not reduce this bulging materially.

The next stage was the injection of hyalase into the orbit itself. On Oct. 8 and 16, the right and left orbits were injected with hyalase by Mr. Herman Treissman. There was a clinical impression of improvement in the movements of the eyes, but no actual measurement of change was possible.

Discharge from Hospital.—The patient was then discharged on potassium perchlorate 200 mg. t.d.s. with thyroid gland gr. $^1/_2$ b.d. and told to attend as an outpatient in two weeks for further injections into his orbit if necessary.

Fig. 3—Distribution of œdema on a shelf on lower part of globe.

Comment

Our patient was unusual in presenting himself with thyrotoxic symptoms preceding the development of his exophthalmic ophthalmoplegia. We had noted from the first, however, that he had a "moist conjunctiva," and we treated him with the apprehension that he might well develop serious orbital œdema. We therefore reduced the dose of methyl thiouracil as rapidly as possible and also gave thyroid extract gr. $^1/_2$ twice daily as a safeguard against the pituitary stimulus that might have come from hypothyroidism.

In spite of these precautions, exophthalmos and conjunctival œdema appeared and progressed steadily, with the result that within three months he had paresis of upward movement of both eyes and of the left external rectus. He was intensely distressed by pain and photophobia. After the failure of radiotherapy, the improvement with hyaluronidase injections was rapid and unequivocal, and now, eleven months later, œdema has not recurred. The left eye, kept at first as a control, also improved rapidly when it was injected.

It is impossible to report the result of the retrobulbar injections with the same confidence. The exophthalmos and the ocular movements have improved slowly, however, and there is no longer any diplopia.

Fig. 4—Condition of left eye after four injections of hyaluronidase.

Our attention has recently been drawn to a paper by Lebensohn (first read in 1940 but not published until 1950), in which he suggested that hyaluronidase might be useful in the treatment of "thyrotropic exophthalmos" and stated that Hopkins, following his suggestion, had used this form of treatment with immediate and permanent improvement in a severe case in which Naffziger's operation had failed. Kadin (1950) reported failure with hyaluronidase in a somewhat complicated case previously operated on for glaucoma. He was discouraged, after a single injection, by a sudden increase in œdema. The volume of his injection was much greater than ours; he gave 1 ml. into the chemosis, 1 ml. retrobulbarly, and a further 1 ml. into the upper lid. We used only 0·4 ml. at a time.

We wish to thank Mr. Treissman for giving the retrobulbar injections, and the photographic department of the West Middlesex Hospital for the photographs.

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Reviews of Books

Principles of Animal Virology

F. M. BURNET, M.D., F.R.S., director, Walter and Eliza Hall Institute of Medical Research, Melbourne, Australia. New York: Academic Press. 1955. Pp. 486. $10.00.

VIROLOGY has expanded so rapidly in the last twenty years that today very few can cover the whole field with knowledge and authority. In this work Sir Macfarlane Burnet discusses a wide range of subjects, with few of which he has not been personally concerned. Clearly, he is addressing those who have already read a great deal or worked in this field; the style is discursive and the emphasis is on the growing edge rather than the established body of knowledge. Many will find the descriptions of studies by the Melbourne workers on the intricacies of virus hæmagglutination or on genetic recombination among influenza viruses too specialised for their needs; but other chapters, such as those on the pathogenesis of virus diseases, the significance of immunity, latent infections, and ecological aspects of virus diseases, should appeal to all readers.

The young bacteriologist or virologist will not be able to complain of a lack of stimuli for his imagination. It is easy to gain the impression that as soon as he had laid down his pen the author would be back at the laboratory bench trying to discover a little more about the road ahead. This is a fascinating account of what he has so far seen on his journey and what he expects to see.

Practical Management of Disorders of the Liver, Pancreas, and Biliary Tract

JOHN RUSSELL TWISS, M.D., F.A.C.P., and ELLIOT OPPENHEIM, M.D., F.A.C.P., assistant professors of clinical medicine, New York University Post-Graduate Medical School. London: Henry Kimpton. 1955. Pp. 653. £5 10s.

THE title of this book might suggest that it is just another volume on diseases of the liver. Although the section on these diseases is both clear and concise, the outstanding sections are those on the disorders of the gall-bladder, biliary tract, and pancreas. For many years the authors and their collaborators have made an intensive study of these disorders at the combined medical and surgical biliary tract clinic at the Post-Graduate Hospital in New York, and the text is illuminated by their vast and profound clinical experience. Of exceptional quality and interest are the chapter on functional disorders of the biliary tract and the section by Dr. William V. Berger on disorders of the pancreas. Dysfunction of this organ, and the cause of such dysfunction, are notoriously difficult to diagnose and laboratory tests are usually indispensable. Dr. Berger's discussion of these tests is of great value. To complete this excellent book is an appendix containing adequate directions for the more important diagnostic procedures, and a series of diets which the authors themselves have found satisfactory. The whole text, indeed, abounds in practical details which will appeal to practising clinicians.

Quantitative Methods in Histology and Microscopic Histochemistry

OLAVI ERÄNKÖ, docent in microscopical anatomy, University of Helsinki. Basle and New York: S. Karger. 1955. Pp. 160. Sw. fr. 19·75.

TO a generation of pathologists reared on tumours the size of eggs and nuts, the idea of precise measurement in histology may seem a trifle meticulous. Quantitative comparisons are nevertheless becoming increasingly important, and there is no handy compendium of theory, techniques, and experience with the metric problems involved. Dr. Eränkö's small book is a first attempt to meet this need.

Quite rightly the introductory chapters, contributed by Mr. Jaakko Kihlberg, deal with variability and its statistical measures; and the lessons of sampling and experimental designs outlined in succeeding chapters are emphasised by precept and practical example throughout. Mechanical methods of measuring size, volume, and light absorption of tissue are described, and the assessment of the errors due to sampling and experimental technique well discussed. Tests of significance including the analysis of variance come, rather curiously, at the end of the book; it might have been more logical to include this discussion in the section on experimental design.

This text should be useful to those who are already familiar with statistical ideas but who wish to apply them in histology and pathology.

Differential Diagnosis

The Interpretation of Clinical Evidence. A. MCGEHEE HARVEY, M.D., professor of medicine, Johns Hopkins University School of Medicine, Baltimore; JAMES BORDLEY, III, M.D., clinical professor of medicine, Columbia University. Philadelphia and London: W. B. Saunders. 1955. Pp. 665. 77s.

THIS is not a textbook. It suggests one method of approach to the diagnosis of disease—that of the clinicopathological conference—and consists for the most part of detailed and specific cases which were presented at the weekly clinicopathological meetings of the Johns Hopkins Medical School. The importance both of collecting accurate data and of analysing them correctly is emphasised. Notable signs or symptoms are taken, and the possible diagnosis discussed in relation to a particular case, with all the relevant findings. The process by which all the many points in history, physical signs, or investigations are sorted out, selected, or discarded is shown, and, with the help of a good many tables of causes, the final logical diagnosis is indicated and discussed in the light of the necropsy findings. This method of teaching, though admirable in action, does not very easily lend itself to the written word. Nonetheless this book makes interesting and useful reading, and some of the 11 unknown cases for study given in a separate chapter provide valuable exercises in diagnostic procedures.

Blutgerinnungsfaktoren

ERWIN DEUTSCH, DR.MED., privatdozent an der I. Medizinischen Universitätsklinik in Wien. Vienna: Franz Deuticke. 1955. Pp. 298. DM. 42.

THIS volume is the first of a new series of monographs on biochemistry. It gives a reasonably complete and up-to-date account of the various factors concerned with blood clotting, from which it is clear that the Vienna school has no heterodox views on this question. There is a useful table of synonyms for the various factors, and also a list of about 2000 references; but the value of this list is reduced because the titles of the articles are not included. For the British reader the book has no advantage over others in English which provide similar information.

Kinesiology of the Human Body

Under normal and pathological conditions. ARTHUR STEINDLER, M.D., F.A.C.S., hon. F.R.C.S., professor of orthopædic surgery emeritus, State University of Iowa. Springfield, Illinois: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1955. Pp. 691. £7 2s. 6d.

THE dynamics of body movement have been a life-long study of Dr. Steindler. In this book he has shorn much of the mathematical argument that made some of his previous works forbiddingly complex, and has endeavoured to relate theoretical considerations to clinical problems in a practical way. He makes it clear that he is fully aware of the possible fallacies in mathematical interpretation of biological events. Indeed, he refers to his basic observations as "theoretical facts." This expression must have evolved in his clinical heart—he is a great clinician—because it summarises the clinician's reaction to the suggestion that the advice he gives to a patient could be dominated by such considerations. It is true that many gross clinical errors would be prevented by an elementary knowledge of dynamics, but the more elaborate theories and calculations are seldom based securely enough to regulate therapy. Nevertheless the orthopædic surgeon should take note of theoretical knowledge; and no-one has more such knowledge, or is better able to impart it, than Arthur Steindler.

Leonardo da Vinci

Das anatomische Werk. SIGRID ESCHE. Basle: Holbein-Verlag. 1955. Pp. 172 + 175 illustrations. Sw. fr. 55.

WE are nowadays so accustomed to technical competence in medical illustration that it is refreshing and instructive to look again at the work of the first great medical artist. The eighth volume of the Ars Docta series contains the anatomical drawings of Leonardo da Vinci, which are of perennial interest to artists and doctors alike. The 96 plates are excellently reproduced, and there is a critical catalogue of the drawings, together with a valuable list of references. The rest of the book includes, among other things, a chronological account of Leonardo's anatomical work and his influence on anatomical illustration, and his famous plan for an anatomical treatise. But the plates remain in command of the book. The catalogue is arranged according to the provenance of the drawings, while the plates are grouped according to their anatomical relationships. This makes it slightly awkward, starting from a given plate, to look up the relevant text, though the converse is simple. Some such difficulty is inherent in the material. This is a beautiful production and a desirable possession.

Bedside Diagnosis (3rd ed. Edinburgh: E. & S. Livingstone. 1955. Pp. 408. 18*s.* 6*d.*).—This diagnostician's guide and friend well deserves the achievement of a third edition, and it is satisfactory to see that it has already reached the Spanish and is to reach the Portuguese reader. Dr. Charles Seward has not substantially changed the form and matter, but there is evidence throughout of careful revision; six sections have been recast, and there is an admirable new chapter on Normal Values with notes on the clinical significance of these biochemical data and details of such investigations as can be made, wholly or partly, in the wards. The book is noteworthy both for its logical approach to diagnostic problems and for its sanity and balance. The influence of the mind on bodily functions and on the production of symptoms is never forgotten.

The Pharmacological Basis of Therapeutics (2nd ed. New York and London: Macmillan. 1955. Pp. 1831. 105*s.*).—It is fashionable to declare that major works of this kind can be written and revised only by a platoon of specialists commanded by an enterprising editor. This belief is again exploded by Prof. Louis S. Goodman and Prof. Alfred Gilman, whose encyclopædic knowledge of clinical pharmacology, and remarkable industry, have enabled them to do the job for themselves. After fourteen years nearly every page of their "textbook of pharmacology, toxicology, and therapeutics for physicians and medical students" has needed revision; but the general structure has not been changed. The most important additions are those on antibiotics and on drugs used in the chemotherapy of neoplastic diseases. We have nothing but praise for the result.

Textbook of Midwifery (16th ed. London: A. & C. Black. 1955. Pp. 582. 35*s.*).—Despite their obstetric experience, Prof. R. W. Johnstone and Prof. R. J. Kellar were taken aback by the premature exhaustion of their last edition, and had at once to embark on resuscitative measures. The result does them credit: and no further comment seems necessary.

New Inventions

AN OBSTETRIC TABLE

THERE are a number of obstetric bedsteads on the market so designed that the foot section slides under the head section or vice versa. Some of these are cumbersome and very expensive, and some have the fault that, with the foot section extended, they are too easily tipped up when downward pressure is applied. The obstetric table here illustrated overcomes these disadvantages. It is of light weight and is both simple and efficient in operation, and complete stability has been obtained by extending the tubular base in a manner which still permits access to the patient when the foot section is pushed in (fig. 1).

The frame of the table is made of light tubular steel of rigid construction, and the platform of sheet steel. By an ingenious ramping device the foot section slides beneath the head end; and when it is extended it forms a single plane with the head section. By means of an easily operated side-wheel the table can be tipped to 30° of Trendelenburg tilt (fig. 2).

Cranked adjustable lithotomy poles are provided. These give six alternative positions for differing lengths of leg, and a swivelled hook for the stirrups enables the leg to be placed on the inner or the outer side of the pole at will.

Near the head end two sockets, one either side, have been incorporated to take a standard size of upright for an infusion apparatus. A 'Trilene'-and-air apparatus can be clamped to the socket.

The finish is of stoved aluminium with chromium-plated attachments.

The light weight of the table and its simple mechanism have evoked the enthusiasm of the nurses.

The table has been designed and made by Messrs. S. B. Whitfield & Co. Ltd., from suggestions submitted by my senior maternity Sister and myself. They call it the Lawson Tait Obstetric Table.

STANLEY W. WRIGHT
M.R.C.O.G.
Rochester, Kent

Fig. 1.

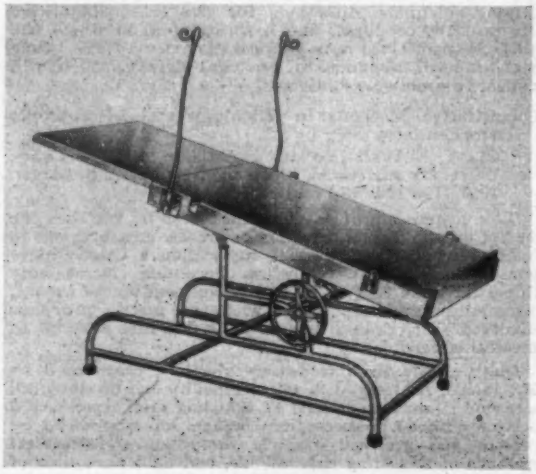
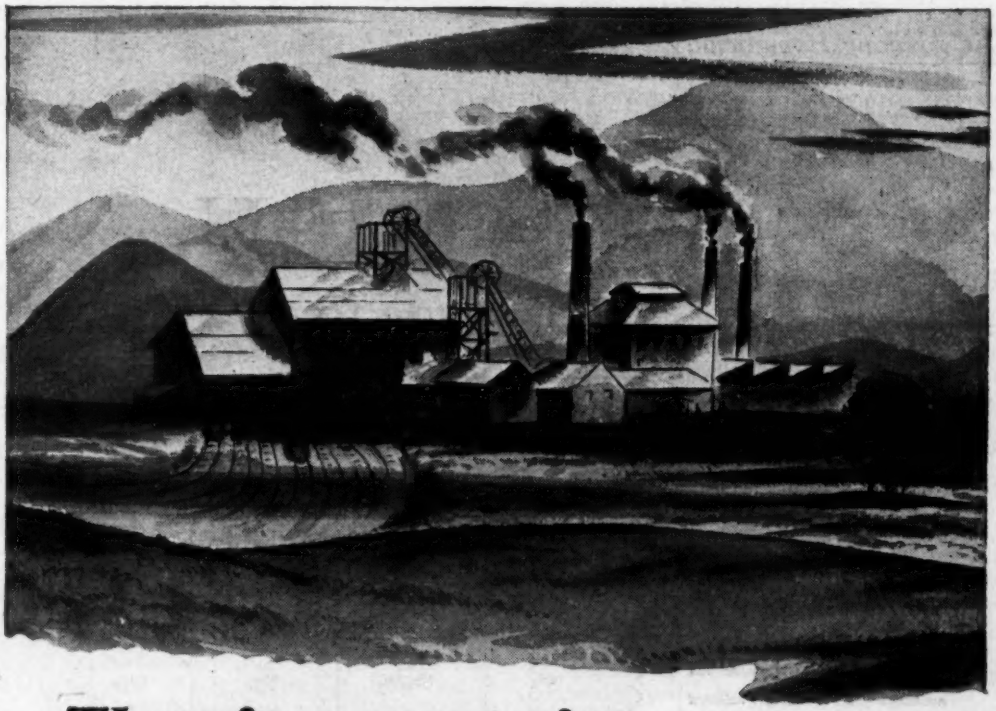


Fig. 2.



There's more to it than meets the eye

How often this is true, and how true it is! For instance, when one looks at a pithead, it gives little indication of all that it stands for and over.

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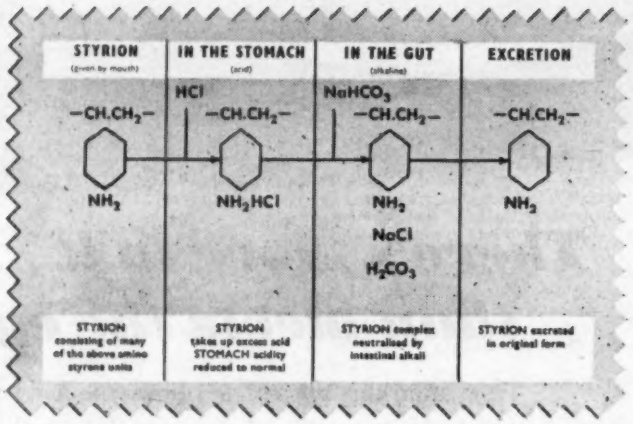

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THE LANCET

LONDON: SATURDAY, SEPT. 10, 1955

Thrombophlebitis after Infusions

BETWEEN a half and two-thirds of all infusions, whether of blood, glucose, or salt solutions, are followed by thrombophlebitis—that is, perivenous cellulitis, with or without thrombosis.[1–4] This troublesome complication seems to have no single cause, but the risk of it is increased when an infusion at one site lasts for longer than eight hours.[1–5] Bacterial infection plays no part,[2 4 6] and one group of workers [7] claim that change of pH between 4·5 and 6 does not affect the incidence. The most important causal factor seems to be the slow leaching out by the infusion fluid of some unidentified irritant substance present in the red rubber tubing of the giving set.[8] The vein wall tolerates this irritant for about eight hours, but longer exposure causes a response whose severity increases rapidly with continued exposure. This hypothesis is supported by several workers, who have found that the use of 'Polythene' tubing [3] or a latex rubber tubing made in the U.S.A.[2] greatly reduces the incidence of thrombophlebitis. But neither of these ensures complete freedom from thrombophlebitis; in fact, one worker using latex rubber [1] encountered thrombophlebitis in 47 out of 100 transfusions, though in only 4 did this develop during the first twenty-four hours.

This problem can be attacked by modifying the transfusion equipment, and by improving the transfusion technique. Modification of equipment would require action on a national or international scale, and it is good to know that several practical transfusionists are members of a committee which has been charged with the duty of designing a disposable plastic giving set. Let us hope that this will prove more satisfactory than the international-pattern giving set which was distributed in September, 1954, but withdrawn a few weeks later. In transfusion technique there is plenty of scope for improvement. Often, nowadays, an infusion is set up by thrusting the largest convenient needle into some superficial vein, which is thereby occluded, and running in the more or less irritant solution, which fills the vein and is not diluted until it reaches a junction with another vein. This infusion is then left running as long as possible—often for twenty-four hours, sometimes for several days. Not infrequently a cannula is tied into the saphenous vein at the ankle, despite the particularly great risk at this site of thrombophlebitis,[3 4] which contributes to that major disability—chronic ulceration of the leg.[9]

No infusion should be allowed to run for more than eight hours at a time. Often during this period all the fluid needed in twenty-four hours can be administered, thus giving the patient sixteen hours a day of freedom from needles or cannulæ; and if a more uniform intake of fluid is desired, it should be possible to change the site of infusion several times daily. If neither of these methods is practicable, a polythene catheter can usually be introduced into the vena cava, so that irritants will be quickly diluted. The resident responsible for maintaining transfusions will be well advised to use as small a needle as possible, and to insert it into the largest convenient vein just distal to a venous junction; securing it by some means which does not occlude the vein distal to the point of insertion. Thus he should try to enter large veins at the proximal end of a limb, and avoid the small veins at the distal end which hitherto have been most commonly used. He should also prefer to enter a vein in the arm rather than in the leg, and should particularly avoid tying a cannula into the saphenous vein. This is a radical subversion of the ideas current a few years ago, and at first it might seem to place a heavy burden on the resident. But if a limb is properly warmed, by surrounding it with a thermostatically controlled electric blanket, full vasodilatation will have taken place in twenty to thirty minutes, and this will ease venepuncture and, by increasing blood-flow, make sure that any irritant is quickly diluted. The thermostatic electric blanket, which can be kept over the infused limb for hours, is in every way preferable to a hot-water bottle, which is ineffective and can cause severe local injury.

"Letterer-Christian" Disease

THERE has been a considerable improvement recently in our knowledge of what for the moment may be termed "Letterer-Christian" disease. Three conditions once regarded as distinct fall under this head. The first to be described was Hand-Schüller-Christian disease, with its triad of cranial bony defects, exophthalmos, and diabetes insipidus. This was a chronic disorder of uncertain prognosis which was shown by ROWLAND in 1929 to have as its most characteristic element a xanthoma cell, a histiocyte with cholesterol; TANNHAUSER in 1938 distinguished it from other general xanthomatoses by the absence of a raised blood-cholesterol level. Next came Letterer-Siwe disease, described in 1933–34—an acute generalised fatal reticulosis of children, whose characteristic cell was a proliferating histiocyte with no trace of lipid. And finally there was the eosinophilic granuloma of bone described in 1940 by JAFFE

1. Richards, H. J. *Med. J. Aust.* 1955, ii, 7.
2. Jones, P. F. *Lancet*, 1954, ii, 970.
3. Morris, J. *Ibid*, 1955, i, 154.
4. Banerji, R. *Ibid*, p. 514.
5. Bolton Carter, J. F. *Ibid*, 1951, ii, 20.
6. Michaels, L., Ruebner, B. *Ibid*, 1953, i, 772.
7. Bolton Carter, J. F., Milne, E. H., Whittett, T.D. *Ibid*, 1952, ii, 660.
8. Handfield-Jones, R. P. C., Lewis, H. B. M. *Ibid*, 1952, i, 585.
9. Anning, S. T. *Ibid*, 1954, ii, 1126.

and LICHTENSTEIN—a solitary slow-growing lesion of older children, clinically often tumour-like but cured by any local treatment or sometimes none at all. Its characteristic cell was an eosinophile granulocyte, though again histiocytes were present: a lesion more like inflammation than tumour.

Recognition that these three conditions are one came with the description of many borderline and mixed cases.[1 2] The picture which emerges is of a continuous spectrum ranging from a solitary non-progressive bone lesion through multiple more or less progressive bone lesions to an acute disseminated lesion in which skeletal lesions, though rarely absent, do not dominate the picture. Recent writers unanimously accept this unified conception, but agree on nothing else: views on the nature of the disease, and on what it should be called, are exceedingly various. THANNHAUSER would appear to regard it still as a disturbance of lipid metabolism (a local defect in the tissues concerned, not a general disorder) and proffers the names "normocholesterolæmic xanthomatosis" or "eosinophilic xanthomatous granuloma." ROBB-SMITH,[3] if we understand him aright, regards it as a progressive reticulosis—"reticulum-celled medullary reticulosis." HARRISON [4] seems also to regard it as a reticulosis and uses the name "non-lipid histiocytosis," which properly speaking is a synonym for the Letterer-Siwe variant. (So also is the word "reticulo-endotheliomatosis" used by other workers.) LICHTENSTEIN [2] frankly admits that the nature of the disease is unknown, but obviously he is especially watchful for an infectious agent. Emphasising the histiocytic proliferation which is more or less prominent in all cases, and the unknown cause, he suggests the name "histiocytosis X." If generally accepted, this might suffice for lack of a better: but, so far as we know, only one group [5] has accepted it even as an alternative title. "Letterer-Christian" disease is a mere colloquialism, and it is most unfair to others who could claim to be co-eponyms; but it is convenient and non-commital.

Two recent reports deserve notice.

In one GOLDNER and VOLK [5] record, under the name "fulminant normocholesterolæmic xanthomatosis (histiocytosis X)," a case of an acute disease of the Letterer-Siwe type in a 67-year-old woman, who died only six months after the onset. In the early stages she had weight loss, bone pains, and diabetes mellitus; in the last two months she had skull radiolucencies, enlarged lymph-nodes in the neck, gingivitis, and skin infiltration; the diagnosis was made on lymph-node and gum biopsies. At necropsy the lymph-nodes and spleen showed a lipid-free histiocyte overgrowth; elsewhere (notably in the renal pelves and bones) the histiocytes contained substantial amounts of lipid (a cholesterol/cholesterol-ester/fat mixture of "xanthoma" type) and there were foci of eosinophils and giant cells. Although this patient was much older than any previously recorded, the diagnosis seems watertight. The disease—especially the acute Letterer-Siwe form—is generally described in children; and it is perhaps sometimes missed through the assumption that it does not occur in adults.

A report from The Hospital for Sick Children, Great Ormond Street,[6] describes 16 cases of the disease diagnosed in children there during a period of thirty years. (By way of giving an idea of the incidence, during the same period 18 lymphosarcomas, 17 cases of Hodgkin's disease, and 94 neuroblastomas have been diagnosed at this hospital.) The series gives an unusually valuable view of the disease as a whole and the frequency of its various manifestations. There were 4 cases of solitary bone lesion, 4 cases of multiple bone lesions (3 with the classical Christian triad), 2 with bone and skin lesions, and 6 with widespread lymphoid and visceral dissemination in 2 of which there were no bone lesions. The mixture of histological features in different cases was convincing evidence of the unity of the group. The 4 solitary lesions all healed under local treatment. Of the 6 children with multiple lesions confined to bone and skin 3 are cured and none has died. Even of the 6 children with acute disseminated disease, 2 are apparently cured. This is a distinctly less gloomy picture than most people would have expected, and underlines the importance of distinguishing the Letterer-Siwe type of lesion from that of malignant reticulosis.

The lipoidoses group seems to be shrinking. Gaucher's disease and Niemann-Pick's disease remain unattacked. But gargoylism can no longer be regarded as a lipoid disorder, since it has been shown histochemically that the abnormal material is probably a mucopolysaccharide.[7] A substantial proportion of the hypercholesterolæmic xanthomatoses are now known to follow biliary obstruction, diabetes, or the like. And it is increasingly difficult to regard even the Schüller-Christian variant of Letterer-Christian disease as anything but the most secondary of xanthomatoses.

High-humidity Rooms in Children's Hospitals

IT has long been recognised that high atmospheric humidity may have a beneficial effect on certain infections of the respiratory tract, particularly in children; and this knowledge is reflected in widespread use of the steam-kettle. But steam humidification may raise the environmental temperature so high that it embarrasses the patient, especially where it is combined with oxygen therapy in the confined space of an oxygen tent or box. This difficulty is overcome by "cold" humidification at room-temperature by means of a mechanical water-vaporiser operated either independently near the patient or in an oxygen tent in conjunction with the oxygen supply. The practice of therapeutic humidification of the atmosphere has been further extended at the Children's Hospital in Vancouver, where for the past five years a high-humidity room has been in operation. In this specially constructed room, which is large enough to hold several children, the relative humidity is kept at 100% and the temperature at 70–72°F. Reviewing five years' experience, BAKER [8] concludes that the room has important advantages over methods of individual humidification. The sense of confinement and restraint inevitable in a tent or box—often disturbing and sometimes intolerable—is avoided; older children are easily accommodated; humidification can be maintained much longer than would be acceptable in a confined space; nursing is much easier and can be carried out with less disturbance to the patient; and there is no delay in an emergency. In addition high humidity applied in this way has been found to combat the tendency towards dehydration

1. Thannhauser, S. J. *Arch. intern. Med.* 1947, **80**, 283.
2. Lichtenstein, L. *Arch. path. (Lab. Med.)* 1953, **56**, 84.
3. Robb-Smith, A. H. T. *In* Recent Advances in Clinical Pathology. London, 1947.
4. Harrison, C. V. *In* Recent Advances in Pathology. London, 1953.
5. Goldner, M. G., Volk, B. V. *Arch. intern. Med.* 1955, **95**, 689.
6. British Empire Cancer Campaign Report for 1954. London, 1955; p. 188.
7. Brante, G. *Scand. J. clin. Lab. Invest.* 1952, **4**, 43.
8. Baker, H. *Canad. med. Ass. J.* 1955, **72**, 914.

in infants and younger children, and may even reverse minor degrees of dehydration; and in this room cross-infection has proved rare. These are important advantages which weigh heavily against the high cost of installation.

"Cold" (as opposed to steam) humidification has been especially advocated for cases of acute laryngo-tracheo-bronchitis, to prevent secretions from drying, becoming tenacious, and further obstructing respiration.[9] BAKER has treated 140 such cases in the high-humidity room. None of these patients required tracheotomy and all recovered. Yet the contribution of humidification to such a satisfactory result would be difficult to determine. The newer antibiotics have improved the prognosis in this disease, and satisfactory results have been obtained with much more limited humidification; the disease itself may have become less severe in the past few years; and the absence of tracheotomy may reflect views on management as much as success in treatment. BAKER finds that high humidity is also valuable in other infections of the respiratory tract and in asthma. That high atmospheric humidity may terminate prolonged asthmatic attacks is supported by the observations of PARLATO[10]; on the other hand, it may help to precipitate exacerbations of hay-fever and sinusitis.[11] In the care of the premature infant in recent years high atmospheric humidity has been extensively if somewhat uncritically used. Introduced as a useful adjunct to the regulation of body-temperature, its virtues have been extended to include prevention of the irritant effect of high concentrations of oxygen on respiratory mucous membrane, limitation of the effect of pulmonary hyaline membrane, and reduction of insensible water-loss, particularly where delayed feeding is practised.[12] Theoretical evidence concerning the effect of various degrees of atmospheric humidity on the respiratory mucous membrane is scanty. Abnormally viscid secretion, as in fibrocystic disease of the pancreas, apparently predisposes to infection, but excessive mucus secretion may under certain circumstances exert a similar effect.[13] Experimental evidence on the effect of humidity on bacterial contamination of the atmosphere suggests that something of a compromise would have to be effected in seeking to control cross-infection by this means. Bacteria and viruses dispersed from the patient in particles of saliva are likeliest to die at a critical relative atmospheric humidity in the region of 50%,[14 15] but bacteria carried on dust particles (such as the streptococcus and the staphylococcus) have been shown to die off more rapidly at the highest relative humidities.[16] Organisms such as *Escherichia coli* probably behave differently.

The therapeutic effect of high atmospheric humidity on diseases of the respiratory tract in children should be further examined in controlled clinical trials. Hospitals which care for children would doubtless feel more convinced about the need for providing high-humidity rooms if there were further evidence confirming their value.

9. Davidson, F. W. *Arch. Otolaryng., Chicago*, 1940, **32**, 321.
10. Parlato, S. J. *J. Allergy*, 1937, **8**, 566.
11. Unger, M. *N.Y. St. J. Med.* 1953, **53**, 1674.
12. Smith, C. A. *Ibid*, 1955, **55**, 2051.
13. Maccabe, A. F., King, H. K. *Edinb. med. J.* 1951, **58**, 377.
14. Dunklin, E. W., Puck, T. T. *J. exp. Med.* 1948, **87**, 87.
15. Lester, W. *Ibid*, 1948, **88**, 361.
16. Lidwell, O. M., Lowbury, E. F. *J. Hyg., Camb.* 1950, **48**, 21.

Training the District Nurse

How long does the tyro, entering general practice, take to learn his job—to learn to look after patients without the resources of the hospital behind him, to master the pattern of municipal and voluntary services, to gain not only the full confidence of his patients, but sufficient confidence in himself? A year perhaps? Not less, certainly: possibly more. He gets little instruction in these things while he is in hospital. The nurse gets even less. Yet the nurse who enters district nursing has to learn these things too, and at a more fundamental level; for it is one thing to call and give directions about the care of a patient, and another to carry them out in any and every kind of home, whether clean or squalid, well equipped or bare of the simplest amenities.

How long a course of special training does the district nurse need to prepare her for such work? The Working Party on the Training of District Nurses,[1] have been split by this question; yet it is one to which we ought to have the answer, for the Queen's Institute of District Nurses, who have been turning out matchless district nurses for two-thirds of a century, say that the minimum for a State-registered nurse (S.R.N.) without other qualifications is a course lasting six months. For S.R.N.s holding the health visitor's certificate, and for State-certified midwives (S.C.M.) they say the minimum is a four months' course. The working party, however, with three dissentients, conclude that the minimum period of training which would equip a State-registered nurse "to assume readily the duties expected of her, to carry them out with understanding and efficiency, and to maintain a high standard of district nursing" is only four months. For S.R.N.s who are qualified health visitors, S.C.M.s or nurse teachers, or S.R.N.s who have already had eighteen months' experience in district nursing, they regard three months as sufficient. The three dissentients are Miss E. J. MERRY, general superintendent of the Queen's Institute, Dr. J. A. STRUTHERS, chairman of its training subcommittee, and Miss J. E. TRELEAVEN, senior superintendent of the Ranyard District Nurses. Miss TRELEAVEN has signed the report, subject to a reservation to the effect that she considers a four months' course to be the minimum in which to prepare adequately all categories of registered nurses for this work; and that in the view of the Ranyard Nurses five months would be an advantage for the S.R.N. without additional qualifications or experience. Miss MERRY and Dr. STRUTHERS have presented a strong minority report.

Before the National Health Service Act, local authorities had no power to provide a domiciliary nursing service, though they could and did employ the services of local nursing associations—most of which were affiliated to the Queen's Institute. The Act gave local authorities the duty of providing a

1. Report of the Working Party on the Training of District Nurses. H.M. Stationery Office. 1955. Pp. 26. 1s. 3d. The members of the Working Party were: Sir FREDERICK ARMER (chairman), Mr. G. GANTY, Miss M. F. CARPENTER, S.R.N., Dr. T. M. CLAYTON, Dame ELIZABETH COCKAYNE, S.R.N., Miss M. H. COOK, S.R.N., Dr. A. R. CULLEY, Dr. DOROTHY EGAN, Dr. G. MATTHEW FYFE, Miss E. J. MERRY, S.R.N., Miss M. O. ROBINSON, R.G.N., Mrs. W. SHUTT, Dr. J. A. STRUTHERS, Dr. J. STANLEY THOMAS, Miss J. E. TRELEAVEN, and Dr. W. S. WALTON, with Miss J. E. Chapple as secretary.

home nursing service, either by employing nurses directly, or by making arrangements with voluntary associations. One result of this was that by the end of 1953 some 4000 district nurses in England and Wales—about half, that is of the S.R.N.s in the home nursing service—had had no special district training. They are said to be working responsibly and well; nevertheless the working party all agreed that "some measure of training" is desirable for a nurse if she is to become quickly efficient in district nursing. She must learn, for instance, how to adapt her hospital techniques to nursing in the home, how to nurse illnesses she has never seen, and what social services to call upon in various situations; and—"perhaps most important"—she needs "further experience so that she may meet more confidently the responsibilities of a district nurse." The majority of the working party, however, point out that the district nurse is no longer working in isolation: she is a member of the public-health team, and is in constant touch with colleagues working in parallel professions. She needs, the majority hold, only an introductory course on the other public-health services. She is supervised, moreover, by the local health authority, and therefore does not need a long period of supervised training, which forms part of the Queen's Institute course, nor does she require to be visited by her training body after she has qualified. The General Nursing Councils for England and Wales and for Scotland have recommended that throughout the new general nursing syllabus (which became compulsory last year) social and public-health aspects of nursing should be given due weight. On this recommendation the majority base a hope that future S.R.N.s will have "some knowledge of the social welfare services and of their place in the care of the sick." The new syllabus prescribes a minimum of 4 lectures on the social aspects of disease, and some (optional) domiciliary visits. The student nurse's few academic hours, however, already cram her with so many facts that it is doubtful whether she will swallow more social welfare than you might take upon a knife's point and choke a daw withal. Besides, as the minority report says, the effects, if any, of the new syllabus will not be apparent before 1957.

The nature of home nursing is undergoing a change, as the special study made by Miss E. A. B. DAVIS for the Queen's Institute (see p. 556) amply demonstrates. The district nurse has the care of many more elderly patients than she used, some of them acutely, some chronically ill; she nurses more patients returning early from hospital after operations, more children, and more people who have been mentally ill, and she gives many more injections. For most of these things, the majority believe, her general training should prepare her. Her district nursing course should be mainly practical, helping her to adapt her techniques and widen her experience. Rising standards in living conditions, it is claimed, have largely relieved her of the need to improvise. The theoretical side should be brief, designed to give her a basic knowledge of health, welfare, and social services, and the special needs of the aged and infirm, the long-term sick, and the family.

These arguments for a shorter course of training do not seem to us to be conclusive; and the opposite view is cogently set out by the minority. Shortening of the training course, they say, would reduce the nurse's practical experience under guidance and supervision, and would not give her the necessary confidence to carry her responsibilities. She needs to see and hear how the public-health service works—not to gather information at random from colleagues. The notion that improved standards of living have destroyed the need for improvisation certainly does not hold in rural areas, where she must still depend on her own initiative and resources. (The minority quote, as an example of living conditions in rural England, one populous county, alone, in which there are still more than 20,000 pail closets, more than 10,000 privy closets, more than 8500 privy middens, more than 3500 houses depending for water on springs and wells, and a further 700-odd relying on standpipes.) District nurses work also in old Army huts, shacks, and caravans. Again, care of the elderly sick does not come the way of most general-trained nurses; nor are they given even a glimmering of understanding of patients recovering from mental illness. In any case, the essence of the district nurse's training is not to be distilled out of the subjects of a syllabus. Her course must give her time to gain experience—that quart that can never be squeezed into a pint pot. All teachers know that time is needed for new ideas and changed techniques to become second nature. The nurses themselves do not complain of the length of the course: in fact they often say they wish it were longer. The College of General Practitioners, whose members work in close liaison with district nurses, do not think it should be shorter: on the contrary, they suggest extending it to a year.

The majority, while holding that any future arrangements should leave the way clear for the Queen's Institute and the Ranyard Nurses to continue to play an important part in district nurse training, suggest that a nationally recognised standard could be ensured by appointing a central committee to issue syllabuses for the four months' and three months' courses of training, to hold examinations, and to advise the Minister on matters relating to district nurse training. The great (to our mind the overriding) weakness of such a suggestion is that mentioned by the minority: it would at once create two grades of district nurses—Queen's nurses, and those taking the shortened syllabus of the central committee. This is surely an odd and undesirable way of attempting to establish a national standard of training—as a sort of poor relation to the best.

The district nurse is our most widely known, most widely trusted, social worker. The rising age of our population, the lack of hospital beds for the old, the discharge of surgical patients from hospital a few days after operation, the growing tendency to nurse children at home, and the earlier discharge of patients from mental hospitals are already making her work richer and more diverse—more, not less, exacting. A suggestion that she can be prepared for her growing responsibilities more briefly, and with less supervision, is quite unrealistic: the part she must play in the mental health service in itself puts such a policy outside practical consideration. We earnestly hope that the counsel of the minority report will prevail.

Annotations

SOME RISKS OF FATHERHOOD

THE obstetrician who claimed never to have lost a father was—judging by the experience of Captain James L. Curtis [1]—luckier than he knew. When making a study of 55 expectant fathers in the United States Air Force, Curtis found 17 (group A) who were suffering severe emotional stress; and 2 of these attempted suicide. 7 in this group were unmarried fathers—unmarried, at any rate, to the mothers of their expected babies. In a second group (B) were 14 with minor emotional problems. All the 31 men in these two groups were referred to Curtis for a psychiatric opinion. The remaining 24 (group C) were controls, picked out of a large number of enlisted men merely because they were expectant fathers. None of these had sought, or been referred for, psychiatric examination; yet a third of these had problems like those of group B, while a further third had similar but milder problems. Unfortunately Curtis does not tell us the incidence of such problems in men not expecting additions to their family. If it happens to be high, fatherhood can be acquitted of some of the malign influence he attributes to it.

He does not base his opinion merely on the incidence of symptoms, however; for he devised the ingenious technique of asking his expectant fathers to draw an animal, and write a story about it. Such a method has all the advantages said to attach to a good bargain: both sides feel they are getting the best of it. By drawing a fabulous monster and writing a stream of nonsense the Serviceman feels he is taking the mike out of the psychiatrist; whereas the psychiatrist, knowing that such streams are fed from the wells of the unconscious, is sure of the last laugh. On Curtis's interpretations the stories and animals produced by the men studied often revealed much anxiety about the coming event, and the demands of fatherhood (to which some felt quite unequal), and much evidence of jealousy of the expected baby. The men in group C achieved, on the whole, a more stable and complete inner image of themselves as good, capable, and loving fathers than those in the other groups. The group-B men more often had an unconscious image of themselves as a good mother, or a good elder child in the family: "they felt uncomfortable in the rôle of a good father." The group-A men could not see themselves as either good fathers or good mothers, or even good siblings or good babies. These interpretations in all three groups fitted in with the men's life-histories, and their behaviour at the time.

Thus the impulsive behaviour of group-A men was getting them into trouble with the authorities. They were given to insubordination, staying away without leave, heavy drinking, and the like, as well as such general symptoms as anxiety, irritability, depression, accident-proneness, headache, dizziness, hypochondriasis, and gastro-intestinal troubles. In group B and group C, such general symptoms preponderated, and there were no cases of overt defiance though there were some of heavy drinking and lower efficiency.

Curtis points out that, once the doctor realises that expectant fatherhood can be so disturbing, he can get patients to focus their attention on the real problem, and discuss their sexual anxieties, their fears about their wives' health, or their own inadequacy, and even practical difficulties to do with money and housing. Only the more difficult cases, he says, need to be referred to a psychiatrist, for "a physician needs no psychiatric training to discuss these very human problems and anticipations which surround the expectation of a new baby."

1. *U.S. Armed Forces med. J.* 1955, **6**, 937.

MALIGNANT MELANOMA

IN the treatment of such a highly lethal tumour as malignant melanoma there is no place for indecision; and those who deal with cases of this disease often express their views strongly.[1]

Results are not easily assessed, partly because of the uncertainty of the histological criteria. What have come to be known as juvenile melanomas have an alarming microscopic appearance, but they are clinically benign.[2] Another difficult feature is the unpredictability of spread. In most cases metastases arise within three years; but the interval may be much longer, particularly with melanomas that have developed in aged people from so-called lentigo malignum. These may recur after local treatment, but spread may be so delayed that the patient dies of another cause before dissemination is clinically apparent. Spontaneous disappearance of the primary lesion of malignant melanoma has been recorded, and even secondary deposits have vanished without treatment. These rare events should not influence our choice of treatment, but they do show how fallacies can occur in the analysis of results in terms of five-year or ten-year survivals.

In treatment, hormones, castration, cytotoxic drugs, and radiotherapy are of little value. Once the diagnosis has been made, the management is essentially surgical. The choice lies between wide, deep local excision alone and such excision combined with a radical operation—for example, hindquarter amputation. The "conservative" school includes some surgeons as well as some dermatologists, who declare that no-one can know whether widespread dissemination has not occurred by the time the patient is first seen. If it has not occurred the patient is spared a needlessly severe operation; and if it has occurred, how can one be certain that it has not already extended beyond the surgeon's range? The "radical" school assert that this is academic quibbling, and that it is their duty to offer the patient all possible surgical help except where the situation is obviously hopeless.

As far as local spread to lymph-glands is concerned, it would seem from Raven's [3] report that it cannot be decided clinically that this has not taken place. He found histological evidence of spread in 50% of nodes where there was no clinical enlargement. This seems to accord with results described by Pack et al.,[4] whose five-year-cure rate in a large series was roughly halved by delay of as little as a month in "definitive surgery" after "adequate local excision."

But in a much smaller series Clark [5] had roughly equal results in three groups of cases treated by local excision alone or by this together with gland dissection within or after three months. McCune and Letterman [6] now claim to have shown the distinct value of prophylactic excision of regional glands. In 26 out of 40 cases clinical enlargement of the glands was present, and, in all but 2 of these, metastases were demonstrated histologically. In 14 cases there was no clinical enlargement of the glands, but in half of this group there was microscopic evidence of dissemination. Of the patients with histological evidence of spread but no clinical enlargement, 29% survived for ten years; whereas of those with neither clinical nor histological evidence of spread, 71% were living after ten years. (This 29% amounts to only 2 cases.) Each of the 2 patients with clinical enlargement of the nodes but no microscopic evidence of metastases died within two years. Thus this small

1. Tod, M. C. *Lancet*, 1944, ii, 532; et seq.
2. Spitz, S. *Amer. J. Path.* 1948, **24**, 591.
3. Raven, R. W. *In* Pigment Cell Growth. Edited by M. Gordon. New York, 1953.
4. Pack, G. T., Gerber, D. M., Scharnagel, I. M. *Ann. Surg.* 1952, **136**, 905.
5. Clark, J. M. *Aust. N.Z. J. Surg.* 1952, **22**, 8.
6. McCune, W. S., Letterman, G. S. *Ann. Surg.* 1955, **141**, 901.

group does not go far to prove the value of gland dissection.

Beerman et al.[7] point out that it is impossible with present knowledge to compare the results from the "conservative" and "radical" surgical methods. They recommend the establishment of a "malignant melanoma registry," possibly on an international basis, to provide a standard approach to histological diagnosis, clinical follow-up, and statistical analysis. This will not appeal to the old school of surgeons—"this is malignant, cut it out"—but it seems to be one way of obtaining an answer before the millennium of cancer chemotherapy.

THE TUBERCULOUS DISABLED

IN the dark glass of an official report, men are seen as columns of figures walking. The Ministry of Labour and National Service, in the section of their annual report [8] dealing with the resettlement of the disabled, tell us that in October, 1954, there were 835,473 disabled persons on the register (a fall of 12,884 since October, 1953), that during the year over 4000 of the disabled completed courses of vocational training, that industrial rehabilitation was provided for more than 10,000 men and women, and that over 115,600 were placed in ordinary employment. Follow-up of 11,000 of the more difficult cases showed that some three-quarters had been satisfactorily resettled. Some figures for industrial rehabilitation units confirm those of a recent study [9]: of disabled people replying to follow-up letters six months after completing the training course, nearly four-fifths were satisfactorily resettled. Such statements give little idea of the skill, care, and personal interest which lie behind them—or, indeed, of the difficulties which individual disabled people may encounter when seeking to benefit by the services offered. Dr. Kenneth Marsh,[10] physician to the Camberwell Chest Clinic, draws attention to some of those which confront tuberculous people, and it is instructive to check his observations against the official figures for this group of the disabled.

The tuberculous on the Disabled Persons Register in 1954 numbered 67,108, of whom 55,812 had respiratory tuberculosis. The report does not state how many of the 4000 people who completed courses of vocational training were tuberculous; but it notes that a part-time course in aero-detail fitting for tuberculous patients was begun as an experiment in one of the London Government training centres. This course gives selected applicants (all of them in a quiescent stage of the disease) an opportunity to attend for four hours' work daily (either every morning or every afternoon) for twelve months—instead of attending full-time for six months. The experiment is proving a success, and the Ministry are hoping to extend it. Awards made for professional training of the disabled numbered, from April, 1949, to the end of 1954, 536, and among those receiving them the tuberculous were well represented, accounting for 233 awards. For those tuberculous patients who need to work under sheltered conditions, Remploy Ltd. reserve seven factories, which employed 525 people in 1954. There are also five approved village or special workshops set up by voluntary bodies, three under the control of local authorities. At all of these the Ministry gives financial help towards the maintenance and training of the patients, from the stage at which they can work only a few hours daily until they can manage a full working day.

All this is useful and praiseworthy; yet it is clear from the numbers of tuberculous disabled on the register, and the numbers (where they are given in the report) of those helped in these various ways, that there must be gaps in the service; and so Dr. Marsh has found. When a patient leaves the sanatorium he may still need to be under his local chest clinic, and he may well need bed rest for part of the day. His former job may be no longer available, or no longer suitable; it may be too heavy, or it may have to do with milk or food, or carry a dust hazard. Occasionally he may have lost his dexterity. If he is able to return to his old job, a good employer may arrange for him to work part-time at first; or he may be able to find work related to his former job, but lighter. The lighter trades, however, are popular among the able-bodied too, and are often fully manned by those experienced in them since youth. Some factories, but not many, retrain men to do their old jobs with the use of mechanical aids; and of course there are the courses of training for new employment, both full-time and part-time, offered by the Ministry. But, as Dr. Marsh points out, many people are not adaptable, lack the interest to learn a new job, or are unwilling to live on a training allowance. Again, part-time courses are few and scattered; the disabled person may have to travel far to get to them. Some offer or require residence in a hostel; but a patient who has already been away from home for months seldom wants to leave it again for a course of training. If he does not take a retraining course, he must compete in the open labour market, but many employers are loth to accept the tuberculous. Moreover, there may be no facilities in the neighbourhood for them to receive treatment or pneumothorax refills after working hours.

Local education authorities will provide home instruction to groups of 8 people at a time; but it is not easy to find 8 people suitable for such instruction at a given moment. Moreover, there is no remuneration for such training: only the teacher gets paid. Home work for the tuberculous is equally unsatisfactory; it is nearly always piece work, and to gain a decent living the patient must often work harder than he should. To help him with his quota the whole family often gather round the table and join in; and if he is an open case their risk of infection is great. Moreover the work may be unsuitable from other points of view: Dr. Marsh mentions sweet-wrapping, and the filling of salt bags for potato crisps. Home work provided by Remploy does not share these drawbacks: the work bears on the jobs in the main factory, in which it is expected the patient will in time go to work. This scheme, however, is still very small; only 145 people in the whole country were thus employed in 1954, and not all of these were tuberculous. Remploy factories for the tuberculous accept sputum-positive cases, but few other places will; and though a Ministry of Health memorandum [11] has said there is no bar to the ordinary employment of such patients, "provided that the placing is subject to approval and medical supervision," Dr. Marsh holds that adequate supervision is quite impossible in such circumstances. He quotes Dr. Alice Stewart's study of the Northampton shoe industry, which suggests that a very high proportion of tuberculous infection arises at work.

The Ministry of Labour rehabilitation units do not take men with positive sputum; yet these are the patients who most need assessment, such as can be given at the units. Those accepted at Government training centres have to be capable of full employment; and there is no such training centre in central London—a strange omission. Colonies for the tuberculous are now outdated, Dr. Marsh believes: "all the patients there lead an abnormal life, as they are far from their normal surroundings and in only a few cases do they have their families with them."

Of a total of 1990 patients on the Camberwell Chest Clinic register, there were 555 (408 men and 147 women) capable

7. Beerman, H., Lane, R. A. G., Shaffer, B. *Amer. J. med. Sci.* 1955, **229**, 444, 583.
8. Annual Report of the Ministry of Labour and National Service for 1954. Cmd. 9522. London: H.M. Stationery Office. Pp. 162. 5*s*.
9. *Minist. Lab. Gaz.* 1955, **63**, 121. See also *Lancet*, July 2, 1955, p. 27.
10. *Med. Offr*, 1955, **94**, 31.
11. Memo. 7/52.

of working, and 460 of these (344 men and 116 women) were in full-time jobs. A further 23 (11 men and 12 women) were working part-time, and a further 72 (53 men and 19 women) were unemployed. In the full-time group 3 men had positive sputum, and 16 were in unsuitable occupations. In the part-time group all were sputum-negative and had suitable jobs. In the unemployed group, 21 men and 3 women had positive sputum. These 3 women and 5 of the men were not really fit for any work, but the other 16 men could well have been employed in a sheltered workshop, had one been available; and most of the remaining 32 in this group would have benefited from retraining.

Dr. Marsh suggests that, if his figures are representative of the whole country, we must need sheltered workshops for 2510 sputum-positive men, and retraining schemes for a further 3780 patients with closed tuberculosis. If we are to eradicate this disease we must, he thinks, accept the fact that training centres can only be run at a loss. Sputum-positive patients must be kept away from their fellow workers—in municipal sheltered workshops employing a small number of men, and in more small factories of the Remploy type. Some adequate form of family allowances would help to ensure the good nutrition of the tuberculous wage-earner's family, and to protect them from infection. What are we prepared to do for a patient until he becomes non-infectious? And what will we do to maintain his welfare and ours if he cannot be made non-infectious? These are the crucial questions; and in Dr. Marsh's view we are not yet finding effective answers to them.

THE PAINFUL INJECTION

THE increasing popularity among clinicians of the parenteral route for administering drugs is not matched by corresponding enthusiasm among the recipients. Dr. Janet Travell [1] found that among professional people whom she questioned 99% had had one or more hypodermic injections, and of these only about 10% said they did not dread the next one.

Travell disagrees with the common opinion that some pain is to be expected from the mere jab of the hypodermic needle: with a non-irritant solution a hypodermic injection can be painless. Immediate pain is due to: (1) local irritation from the antiseptic or the parenteral solution; (2) mechanical trauma from the needling or the sudden distension of the tissues by the rapid introduction of fluid; or (3) abnormal sensitivity, either of the skin or the underlying muscle, at the site of injection. Counter-stimulation, by pinching or slapping the skin just as the needle is inserted, may distract the patient's attention from the prick; but the most convenient measure to eliminate skin pain is the application of cold. Nerve conduction is blocked when the temperature falls to about 10°C. Intermittent application to the skin of an ice-cube for a few minutes before the injection is efficacious, but a refrigerant spray of ethyl chloride or one of the halogenated hydrocarbons is more reliable. The spray need be applied only for two or three seconds; and recovery of sensation is correspondingly rapid, so the skin should be cleansed beforehand and the syringe be handy for immediate injection. Travell gives three rules for eliminating cutaneous pain: (1) use a sharp needle, with no barbs, which has the smallest diameter compatible with the viscosity of the injection solution; (2) allow a volatile antiseptic, such as alcohol, to evaporate fully before making the injection; (3) apply a cooling spray to the site for two or three seconds and insert the needle directly the liquid has evaporated from the skin.

Severe subcutaneous pain is due to the needle entering and pulling on the fascia of the underlying muscle. The injection solution should be buffered and isotonic, and at room or icebox temperature.

Venous pain is minimised if the course of the vein and its patency are accurately determined beforehand. If the injection solution is a local irritant, it should be injected slowly, so that it is diluted by the blood-stream; slow injection also gives the patient time to warn the doctor promptly if the solution leaks outside the vein.

Muscular pain results from injection into a hypersensitive area of muscle. These spots of deep hyperalgesia ("trigger areas") may be recognised by careful palpation, which reveals deep tenderness, referred pain, and hypercontractility. With practice, the trigger area is felt as more resistant than the surrounding normal muscle. Normal muscle is practically insensitive to dry needling; but an irritant solution may cause pain, unless a local anæsthetic is incorporated in the injection fluid. Travell also urges caution in using for intramuscular injection any region of the body that has been the seat of a severely painful state, such as acute bursitis with calcification. It is best to inject into the mid-portions of the deltoid or gluteus-maximus muscles. If by chance the muscle twitches or pain is felt on insertion of the needle, this should be withdrawn from the muscle but not out of the skin, and redirected into a non-tender area; and the solution should always be injected slowly.

The attention to detail recommended by Travell would seem to be eminently worth while for both doctor and patient.

HYPNOSIS FOR THE BURNED

AMONG those who treat burned patients opinion is still divided on whether the patient should be anæsthetised during local treatment. In many clinics morphine analgesia alone is used, while in others the procedure varies from simple nitrous-oxide/oxygen analgesia with the addition, if need be, of ether, to administration of relaxant drugs and endotracheal intubation. By means of hypnosis Crasilneck et al.[1] have successfully relieved pain in 6 out of 8 patients during initial local treatment and subsequent dressings and skin-grafting; and these hypnosis patients were induced to eat much more.

Once the dangers of fatal oligæmia due to plasma loss and of infection have been surmounted, the greatest problem in the severely burned is that of nutrition. Patients with deep burns lose much protein in the exudate from the granulating areas, and this, coupled with the usually poor consumption of food, leads to severe wasting of muscle and fat. In this "katabolic" state skin-grafting, autogenous or homogenous, seems to be less successful than when nutrition is good and the patient is in an "anabolic" state. Attempts have been made to improve the nutritional state of burned patients by intravenous feeding with amino-acids, calories being provided by infusion of glucose and other sugars and fat emulsions; but intravenous feeding of this kind, besides being expensive, is liable to impair appetite and so reduce oral consumption of food, and the utilisation of the amino-acids is uncertain. Repeated infusions of plasma are dangerous, and unless accompanied by non-protein calories are nutritionally unsound. Large amounts of calories and protein have been administered successfully by instilling homogenised food through an indwelling nasal tube into the stomach; but this method is liable to cause nausea when administration is intermittent or diarrhœa when it is continuous, and some patients find it difficult to tolerate an indwelling tube for long.

By hypnotic suggestion Crasilneck et al. increased the daily intake to over 7000 calories in 3 patients and maintained a large intake for twelve days. Not only was the total quantity of food increased, but individual dislikes for particular foods were overcome and a selective

1. Travell, J. *J. Amer. med. Ass.* 1955, **158**, 368.

1. Crasilneck, H. B., Stirman, J. A., Wilson, B. J., McCranie, E. J., Fogelman, M. J. *J. Amer. med. Ass.* 1955, **158**, 103.

intake of suitable food could be specifically suggested. The pathetic physical and mental state to which a previously healthy young man can be reduced by the pain, partial starvation, and tissue wasting accompanying the sloughing and granulation of extensive burns presents a therapeutic problem to which there is still no certain solution. Much quicker progress has resulted from earlier excision and grafting, often with donated skin, and the ensuing reduction in the extent of the granulating surface; and the account by Crasilneck et al. strongly suggests that hypnosis may be a valuable further aid. Against the more general clinical use of hypnosis it has been said that some patients are not amenable, that it is expensive of the psychiatrist's time, and that it can be applied only by the highly trained.[2] Crasilneck et al. are not impressed by these objections. Of the 8 patients they treated 6 were suggestible; and only an hour and a half was required to obtain initial rapport, while the subsequent inductions took only a few minutes. Suggestion was reinforced by brief daily episodes, and rapport could be transferred to the surgeon after only a few visits. Further trial of this method should, if possible, be combined with controlled observations of its effects on the metabolic disturbances.

D.N.A. AND NUCLEOPROTEIN

CYTOLOGICAL, chemical, and genetic researches all point to a close relation between the genetic functions of the cell and the desoxyribonucleoprotein contained in the cell nucleus. Since the protein moiety may be as simple a structure as a protamine, the complexity necessary in the genetically active system doubtless resides in the desoxyribonucleic acid (D.N.A.) molecule. Perhaps the best-known example of a genetic change initiated by D.N.A. is in the transformation of *Pneumococcus II R* (an attenuated non-encapsulated organism forming rough colonies) to *Pneumococcus III S* (an encapsulated strain forming smooth colonies) by minute amounts of extracts of the III S strain. This extract had all the properties of a D.N.A. and appeared free of other materials such as bacterial polysaccharides.[3] The chemical and physical structure of the D.N.A. macromolecule is therefore of fundamental importance. It has long been known that the macromolecule is in the form of a long fibre built up of essentially simple mononucleotides, each mononucleotide consisting of a heterocyclic base (for the most part adenine, guanine, cytosine, or thymine) linked to a sugar (desoxyribofuranose) bearing a phosphoric-acid residue on its terminal hydroxyl group. The macromolecule is built up by one of the free phosphoric-acid groups of one mononucleotide being esterified to the free hydroxyl group in the sugar ring of another mononucleotide, and so on.[4] The elucidation of the exact sequence of some 3000–30,000 mononucleotides in a macromolecule with a molecular weight[5] of the order of 10^6 to 10^7 is not likely to be achieved, but the over-all picture of the molecule is becoming clearer and the structure suggested seems capable of explaining many of the physical, chemical, and biological data.

As long ago as 1938 X-ray diffraction photographs of fibres of D.N.A. were found to show evidence of crystalline form, there being proof of a regularly repeated unit in the macromolecule occurring every 3·4Å.[6] But more recently it was shown that if a needle-point is slowly withdrawn from a viscous gel of sodium desoxyribonucleate in water under conditions of controlled humidity, fibres are produced which give two distinct types of X-ray diagrams,[7,8] the one highly crystalline (structure A) and the other paracrystalline (structure B) with a lower degree of regularity. These two structures are normally interconvertible and differ in degree of stretching and of water content. Crystallographic analysis of these diffraction patterns[7,8] and of the crystal structure of the simple constituents[9] have led to the suggestion that the macromolecule is a double helical structure—two paired chains of nucleotides each coiled round a common axis.[10] (A helical type of structure, so successful in explaining protein structure, had been suggested previously,[11] but the details had been severely criticised.) The phosphoric-acid residues lie on the outside, and the heterocyclic bases on the inside of the helix. The individual nucleotides are 3·4Å apart and the structure repeats its coil every 34Å. Each chain is held to its partner by hydrogen bonding between adjacent pairs of heterocyclic bases, and consideration of molecular models shows that the only permitted pairing is between adenine and thymine, and between guanine and cytosine. This accords with published data on the base content of D.N.A. isolated from widely differing biological materials. These analyses have shown that the molecular proportion of adenine is always equal to that of thymine and the molecular proportion of guanine was always equal to that of cytosine.[12]

Any structure for a genetic material must be able to suggest how the material can be accurately duplicated within the cell to account for inheritance characteristics. Previous suggestions had rested mainly on a template type of hypothesis, but the double helix immediately suggested another, more likely, mechanism.[13] In the intact double helix, whenever adenine occurs in one chain thymine must occur in the other, and vice versa; and similarly for guanine and cytosine. Before the new synthesis of D.N.A. occurs (which, incidentally, appears to take place some time before cell division[14]) the double chain might uncoil and then, a pool of precursors being available, each separate strand could build up another chain of exactly the same configuration as its original partner since only the same hydrogen bonding is permitted. The proposed double helix is an open structure, so there is ample room for a polypeptide to coil round the same axis, and in the proposed model the phosphoric acid residues occur at intervals of 7·1Å—a distance close to the repeat of a fully extended polypeptide chain. A possible explanation of spontaneous mutations might be that one of the heterocyclic bases in the newly formed genetic material occurred in a different tautomeric form. In an extension of this work[15] some of the dimensions first proposed have been slightly altered, and further characteristics of the proposed structure have been suggested.

2. Wolberg, L. R. Medical Hypnosis. New York, 1948; vol. I.
3. Avery, O. T., MacLeod, C. M., McCarty, M. *J. exp. Med.* 1944, **79**, 137.
4. Gulland, J. M., Jordan, D. O., Taylor, H. F. W. *J. chem. Soc.* 1947, p. 1131.
5. See Jordan, D. O. *In* The Nucleic Acids. Edited by E. Chargaff and J. N. Davidson. New York and London, 1955; vol. I, p. 470.
6. Astbury, W. T., Bell, F. O. *Nature, Lond.* 1938, **141**, 747.
7. Wilkins, M. F. H., Stokes, A. R., Wilson, H. R. *Ibid*, 1953, **171**, 738.
8. Franklin, R. E., Gosling, R. G. *Ibid*, p. 740; *Ibid*, 1953, **172**, 156; *Acta cryst., Camb.* 1953, **6**, 673, 678.
9. Furberg, S. *Nature, Lond.* 1949, **164**, 22; *Acta cryst., Camb.* 1950, **3**, 325.
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THE INDEX and title-page to Vol. I, 1955, which was completed with THE LANCET of June 25, is now in preparation. A copy will be sent gratis to subscribers on receipt of a postcard addressed to the Manager of THE LANCET, 7, Adam Street, Adelphi, W.C.2. Subscribers who have not already indicated their desire to receive indexes regularly as published should do so now.

The Wider World

BRITISH NORTH GREENLAND EXPEDITION 1952-54

Medical and Physiological Aspects

H. E. LEWIS
B.Sc., M.B. Cape Town
OF THE DIVISION OF HUMAN PHYSIOLOGY, MEDICAL RESEARCH COUNCIL; FORMERLY LECTURER IN PHYSIOLOGY, UNIVERSITY COLLEGE, LONDON

J. P. MASTERTON
M.B. Glasg., D.Obst.
SURGEON LIEUTENANT, R.N.V.R.

(*concluded from p. 500*)

Medical Arrangements

THE SICKROOM

The sickroom measured 8 ft. × 6 ft. 8 in. A bunk was installed in it, and to make this suitable for examining patients it was raised on four tins. A special bed would have been better. Blankets must be remembered, since everyone normally has sleeping-bags, which are unsuitable when a man is ill. We forgot to bring blankets, but fortunately procured some in Greenland.

The sickroom also contained a desk and several cupboards made out of boxes (fig. 13). The lighting was similar to that in the physiology laboratory (vide infra). An electric steriliser was found to take too much current, and a pressure cooker was used instead. A large pressure cooker is a most useful piece of sickroom equipment. Since one cannot always depend on suitable fittings being supplied by the electrical department, the doctor should see that he has a good examination torch and perhaps an angle-poise lamp. The sickroom had an independent heating system in the form of an efficient paraffin stove.

Equipment and Drugs

The choice of equipment and drugs is a problem, especially where weight and space for transportation are limited. The total weight of our medical supplies, including adequate packing, was 600 kg. (12 cwt.). Many instruments and drugs were never used, and it is difficult to assess their usefulness in a possible emergency. Some items, however, are obviously essential, and table I shows our instruments classified according to usefulness or probable usefulness. Table II is a list of the drugs we should consider necessary for an expedition.

Fig. 13—View of the sickroom. Dr. Masterton doing a blood-count. Note the use of polythene bottles.

TABLE I—INSTRUMENTS

(*a*) *Instruments Actually Used*

- Bunsen burner (methylated spirit)
- Camel-hair brushes
- Catgut sutures (assorted) in sterile ampoules
- Cheatle forceps
- Dental instrument kit (as issued to H.M. ships)
- Dental foot-operated machine
- Diagnostic set
- Dissecting-forceps (toothed and plain)
- Ear syringe
- Enamel trays for instruments
- Eye-bath
- Finger-stalls
- Gallipots
- Glass slab
- Head-lamp
- Labels
- Medicine-glasses (plastic)
- Methylated-spirit burner
- Minor-operations kit (as issued to H.M. ships)
- Nasal forceps (examination)
- Needle-holders
- Oil-stones and hone for needles, &c.
- Orange-sticks
- Palate-knife
- Penicillin insufflator
- Pipettes for nasal drops, &c.
- Polythene bowls
- Pressure cooker
- Probes
- Safety-pins
- Scalpels (detachable blades)
- Scissors (dressing; stitch; general-purposes)
- Scrubbing-brushes
- Silkworm-gut sutures (assorted) in sterile ampoules
- Sinus forceps
- Soap
- Spencer Wells forceps
- Splinter forceps
- Sphygmomanometer
- Stethoscope
- Surgical needles (assorted)
- Syringe (cartridge)
- Tendon-hammer
- Thermometers
- Tongue-depressor (steel)

(*b*) *Instruments that Might be Used*

- Anæsthetic airway
- Anæsthetic dropping-bottle
- Anæsthetic mask, open
- Blood-transfusion kit with dried plasma, &c.
- Bone cutters and nibblers
- 'Clinitest'
- Eye instrument kit (as issued to H.M. ships)
- Hamilton-Bailey cannulæ
- Horsley's bone-wax
- Major-operations kit (as issued to H.M. ships)
- Mouth-gag
- Open razor
- Orde's splint (one for each base or large party)
- Oxygen cylinders
- Plaster-shears
- Rubber gloves
- Rubber tubing for drainage, &c.
- Sets of wooden splints
- Stomach-tube, large
- Syringes (2 ml.; 10 ml.; 20 ml.) made of nylon
- 'Trilite' inhaler
- Urethral catheters (Foley)
- Urine diagnostic set

(*c*) *Instruments Considered Unnecessary*

- Chinese twist
- Head-mirror
- Horse-hair sutures
- Irrigation set
- Plaited silk
- Rectal speculum
- Rubber drainage-tubes (see rubber tubing)
- Tourniquets
- Undines
- Urethral bougies

(*d*) *Suggested Additions*

- Malleable copper retractors (several sizes)
- Polythene or silicon tubing may replace rubber for durability
- Ryle's tube
- Wooden tongue-depressors

THE ICE CAP STATION

A small medical kit was dropped by parachute at "Northice" as part of the establishment of the station. This contained some instruments for minor surgery, including dentistry, and a collection of dressings and drugs. It also contained replacements for the first-aid kits carried by the weasel teams. No serious problems arose on the ice cap, and the medical kit was quite adequate except that it should have had more aspirins and laxative tablets.

When one of the doctors travelled to "Northice" he took with him some extra instruments and drugs for possible use while he was there.

FIRST-AID

Every individual, whether sledger or weasel man, carried a personal first-aid kit containing 2 'Tubonic' ampoules of morphine (each gr. $^1/_4$), about ten assorted 'Elastoplast' dressings, a first field dressing as used in the Services, and usually a crêpe bandage and "pepper-pot" of sulphanilamide powder and lanolin.

In addition, since men travelled in groups of two or more, every unit of two was provided with a first-aid kit contained in a robust bag made so as to be proof against drift snow. The contents of this first-aid kit are shown in table III. The weasel teams were also issued with splints,

Fig. 14—The physiological section. Dr. Lewis using a photo-electric colorimeter.

blankets, hot-water bottle, oxygen cylinder, chlortetracycline (aureomycin) capsules, codeine tablets, amphetamine tablets, cascara tablets, and extra bandages. All teams carried vitamin capsules to take once per day.

The most useful first-aid items were crêpe bandages, elastoplast, lanolin, and aspirin.

Physiology

THE LABORATORY

Fittings.—Floor space (6 × 8 ft.) in the main laboratory was allotted for physiology, and this was partitioned off as a cubicle. Along the wall, four of our empty wooden boxes were arranged horizontally to make a desk which was also used for hæmatology (fig. 14); along an adjoining wall a similar arrangement provided a work-bench where solutions were made up, test-tubes washed, or specimens labelled.

We should like to thank the staff of the Medical Research Council laboratories, Hampstead, for their very careful and intelligent packing of equipment. For example, a small tube of reagent was tied to a larger bottle, so that it would not be lost in the straw packing. The carpentry of the boxes was excellent; in spite of extremely rough handling, neither the boxes nor the contents were in the slightest way damaged. While the boxes served as laboratory furnishings, the lids and screws were carefully stored, and there was therefore no difficulty in repacking at the end of the expedition, when competition for any strong box was fierce. Indeed, this provision illustrated the principle that one has to be completely self-supporting and even have one's own tools, screws, electrical accessories, stationery, and (most important) "odds and ends." All laboratory workers know the value of having a drawerful of miscellaneous pieces like copper wire, 'Perspex,' cellulose tape, cold solder, string, and razor-blades.

Water came from the same source as the domestic supply; but this lake water contained a fine suspension of glacial silt which was not readily filtered. Another potential source was from nearby icebergs which had calved from the glaciers; but chipping and melting this ice was tedious. Another unsatisfactory source was the local drift snow; not only did it contain a large amount of sand, but one could never be sure that it had not been contaminated by dogs or men.

Distilled water, therefore, had to be used for all solutions and for rinsing glassware; we made it with an improvised still (fig. 15), which at best was not very efficient and required continual attention. A small commercially made apparatus would have been invaluable, since pure water was needed also for the sickbay, the darkroom, the batteries, and the hygrometers.

Knowing that aqueous solutions freeze in the winter and that glass containers would crack, we used 'Polythene' bottles. They were supplied in sizes ranging from 500 ml. to 50 ml.—about 500 of the latter being brought for blood specimens. We took other miscellaneous apparatus made of plastic, since it was virtually unbreakable. Because it did not crack or break, the polythene was perfectly suited to our needs in the laboratory and for travelling, and spare bottles were always eagerly sought after by other scientists, especially for sledging-trips.

Power lines were led from the generator room; 230-volt A.C. for the centrifuge and 12-volt D.C. for the photo-electric colorimeter and microscope lamp. General lighting was either 230-volt A.C. from the generator or 24-volt D.C. from batteries. One of our generators was lost overboard while being off-loaded; so we had to rely on a single machine in the first year, and during the

TABLE II—DRUGS AND DRESSINGS CONSIDERED NECESSARY ON AN EXPEDITION

Where an alternative is recommended, the drug actually taken to Greenland follows in italics. Drugs which were actually used are marked with an asterisk.

Aluminium hydroxide gel tablets (magnesium trisilicate powder*)
Amphetamine sulphate tablets
Amyl nitrite capsules
'Anthisan' cream (*mepyramine maleate*)
'Anthisan' tablets (*phenindamine hydrogen tartrate*)
'Anusol' suppositories
Aspirin tablets*
'Avonine'
'Benzedrine' inhalers*
Benzyl benzoate emulsion
Boric acid powder*
Brandy*
'Brulidine'*
Calamine lotion (*oily calamine lotion*)
Carbromal tablets (*butobarbitone*)
Carbolised resin*
Castor oil*
Cascara sagrada tablets*
Cetrimide powder*
Chloroform—because non-inflammable
Chloroform capsules
Clove oil*
Cocaine ointment ophthalmic (*cocaine lamellæ**)
Codeine co. tablets*
D.D.T. dusting-powder
Digitoxin ampoules
Distilled-water ampoules
Dimethyl phthalate ointment*
Ephedrine tablets*
Eserine hydrochloride tablets
Ether, anæsthetic
Ethyl chloride spray
'Everhot' bags (kaolin*)
Euflavine tablets*
Filix mas
'Flaxedil'
Fluorescein tablets
Formalin lozenges
Gas-gangrene antitoxin
Gentian-violet tablets
Glyceryl trinitrate tablets
Gutta-percha*
Homatropine tablets
Insulin
Iodine tincture, mitis*
Lanolin*
Liquid paraffin
Methylpentynol (phenobarbitone)
Morphine—'Tubonic' ampoules
Morphine tablets (hypodermic tablets are used for injection and orally)
Nikethamide ampoules
'Nobecutane' (*collodium flexile**)
'Omnopon' and scopolamine ampoules (*atropine tablets, morphine tablets*)
'Paludrine' tablets (oral tablets*)
Penicillin powder (use sparingly)*
Penicillin (procaine) for injection
Penicillin lozenges
Pethidine tablets
Pholcodine elixir (*syrup of codeine phosphate**)
'Pragmatar'*
'Priscol' ampoules and tablets
Sodium bicarbonate powder*
Sodium chloride tablets*
Sterile dusting-powder*
'Sudol' (*'Dettol,'** 'Lysol,'* 'Kilkrobe'*)
'Sulfex'*
Sulphacetamide 30% ophthalmic*
'Sulphatriad' tablets*
Tannic acid jelly (*acriflavine emulsion**)
Tetanus antitoxin
Tetracycline capsules (*chlortetracycline,** *chloramphenicol,** *oxytetracycline*)
Thrombin foam ('Calgitex' gauze)
Thiopentone
'Trafuril' ointment*
'Trilene'
Triple dye jelly*
Turpentine liniment (*methyl salicylate lin.**)
'Tyrozets' lozenges*
'Vaseline'*
Vitamin capsules*
White precipitate ointment*
'Xylotox' 2% in cartridges*
Zinc oxide powder*

Dressings
Bandages, adhesive waterproof (*zinc oxide bandages**)
Bandages, crêpe* (can largely replace gauze bandages in first-aid kits)
Bandages, 'Elastoplast' (3 in. and 1 in., porous type)
Bandages, triangular*
Bandages, 'Tubegauze' (*bandages* 3 in.,* 2 in.,* 1 in.*)
First field dressings*
Gauze*
Plain paraffin gauze (medicated paraffin gauze*)
Polythene sheeting for general purposes*
White lint*

Note.—Have all drugs put up in plastic containers if possible.

three months' winter night occasional power failures caused some inconvenience.

Laboratory planning.—We were pleasantly surprised to find how few snags there were in running the laboratory, considering how quickly the original planning was done, and how difficult it was to get delivery of even standard apparatus from manufacturers at short notice. We were fortunate to have the active and interested help of the technicians of the physiology and pharmacology departments of University College, London, and of the Medical Research Council and members of the Royal Naval Personnel Research Committee.

Ideally there should be enough time to adopt the "picnic" technique to test the completeness of one's preparations. The principle is simple: before sealing the boxes take them to a bare room, preferably a few miles away from one's institute, and set up the various experiments. Only then may one realise that the preparations are incomplete without articles like detergent, cotton-wool, grease-pencils, test-tube racks, rubber tubing, or a burner, which are all taken for granted in an established laboratory.[2]

THE RESEARCH PROGRAMME

The physiological findings will be published fully later, but the following notes give an idea of their scope:

Sleep rhythm.—Information was gathered on small cards, 10 cm. square, which had been specially printed and were distributed each month. The men recorded the hours they slept in the twenty-four, and noted the day's activities in an appropriate column. By this method we have a fairly complete record of the men's sleep over the two years, and now that the cards are being analysed it may be possible to demonstrate the effect of such external phenomena as meal-times, continuous summer daylight, and winter darkness.

Diurnal temperatures were taken two-hourly for a whole day, at intervals of a month, using an oral clinical thermometer. The investigation was carried out on the personnel at the base laboratory, at "Northice," and, when opportunity permitted, on the seismic team in the field. Changes in an individual's range of body-temperature over the two years may well indicate objectively that there has been some acclimatisation to the cold.

Physical efficiency.—The Harvard Pack Test was performed once a fortnight.

Weight.—Most of the members were weighed as part of their medical examination in Britain. An attempt to weigh them again was made during the voyage to Greenland, but the pitching of the ship produced highly inaccurate readings; so it was only in mid-September at Britannia So that the first reliable weighings were made in the shelter of the base hut. Subsequently the men were weighed weekly, under standard conditions. The weights changed considerably over the two years, and all the men took a keen interest in the fluctuations, some protesting at increases and others, quite pleased, putting them down to muscular development.

Fat thickness.—Folds of skin were regularly measured with a pair of callipers, at 36 fixed points over the surface of the body. Variations in these readings from time to time reflect changes in the amount of subcutaneous fat in the folds, and the figures should provide information on the pattern of fat deposition with changes of body-weight. An increase of

TABLE III—FIRST-AID KIT (2 men for three months)

Item	Quantity	Remarks
Compressed lint	4 oz. (112 g.)	Unnecessary
Compressed gauze	6 metres	
Compressed wool	4 oz. (112 g.)	
Bandages, 3 in.	4	Replace by 5 3-in. crêpe bandages
2 in.	4	
1 in.	1	
Crêpe bandage, 3 in.	1	
Triangular bandage	1	
Tourniquet	1	Unnecessary
Safety-pins	6	
'Elastoplast,' 1-in. roll	1	3 would be better
3-in. roll	1	
Eye-bath	1	Made of polythene
Eyeshade	1	Unnecessary
Instrument roll:	1	
Emergency sutures	3	
Scissors, dressing	1	
Forceps, Spencer Wells	1	
Forceps, dissecting	1	
Scalpel	1	
Thermometer	1	
'Monojet' morphine hydrochlor. gr. 1/4 (15 mg.)	2	
Morphine sulph. tablets gr. 1/4 (15 mg.)	12	
Ophthalmic cocaine tablets gr. 1/20 (3 mg.)	12	Replace by cocaine ointment in tube
Ophthalmic adrenaline tablets 6 mg.	12	Unnecessary
Chloroform capsules	6	
Aspirin tablets	30	Unit-packed
Sulphanilamide sprinkler	1	Unnecessary
Boric acid powder	1 oz. (28 g.)	In polythene bottle
'Vaseline'	1 oz. (28 g.)	Unnecessary
Lanolin	1 oz. (28 g.)	Increase to 2 oz. in polythene jar
Triple dye jelly	1 oz. (28 g.)	In polythene jar
Iodine pencil	1	Increase to 2
Brandy	6 fl. oz. (180 ml.)	In polythene bottle
Ung. hydr. ox. flav.	1/4 oz. (7 g.)	In collapsible tube
Satchel	1	
Suggested additions:		
Cascara sagrada tablets	20	Unit-packed
1-in. roll of waterproof adhesive	1	
Aluminium hydroxide tablets	20	Unit-packed
Codeine co. tablets	20	Unit-packed
'Sulphatriad' tablets	20	Unit-packed

2. The McArthur microscope, developed to a high degree of efficiency and versatility in the last few years, is the ideal field and laboratory microscope for an expedition. It is no bigger than a 35-mm. camera (McArthur 1945).

Fig. 15—An improvised still. A polythene tube carries the steam to a condenser outside, beyond the triple glass windows. The external temperature is −45° C(−50°F). The scientist collecting the distilled water must wear gloves, especially to prevent his hands sticking to the metal.

Fig.16— Burying a tin of specimens in a snowdrift during early summer.

subcutaneous fat may be evidence of acclimatisation to cold.

The measurements, which take about half an hour, were made once a month, and many of the men made the most of the occasion. One scientist used to ask for a day's warning, so that he could have a wash and put on a change of underclothes; but the others were not as thoughtful, nor did we want them to go through this complex preliminary. Some humour developed round this fat-thickness work (called the "tickle test"); one man would always say, after a rather painful pinch: "Just replace that fold of skin before you continue the game."

Basal Metabolic Rate.

Hæmatology.—Several estimations were made on specimens of blood taken every month. We were looking for evidence of seasonal changes in red-cell count, hæmatocrit, and hæmoglobin. So as to be sure of our hæmoglobinometer readings, we made arrangements for a standard specimen from the Medical Research Council unit, Hammersmith, to be included in air drops about four times during the expedition.

Eosinophil-counts were made, as an assessment of stress. We also brought back specimens of plasma for cholinesterase estimation.

Nutritional balance.—The calorie value of the diet of a group of men was carefully measured while they were at base and later during sledging. Specimens of total stools were brought back so that a thorough analysis of the nutritional balance could be made. As with blood specimens, the stools were preserved by freezing during the winter.

When the thaw came, all specimens were buried in lingering snow-drifts (fig. 16), and when these finally melted, the tins containing the samples were immersed in the lake water, which was at 1°C (33°F). For the journey home they were repacked into gallon 'Thermos' flasks containing ice chipped from a glacier.

Water balance.—Intake and output were compared during the winter and summer; and another investigation was carried out to observe differences at the base laboratory and on sledging trips, where the extremely hard physical work increased the water-loss through sweating.

These physiological tests were not pleasant for the subject. Some had to be made in the very early hours; others required waking a man three or four times during the night; and one involved uncomfortable hard work for five minutes. In the fat-thickness test different areas of the skin had to be pinched up 70–80 times, and the subject may well have felt conscious of his dirty body and unwashed clothes, which were of necessity a feature of the expedition. And, finally, blood collection required the discomfort of an intravenous procedure. All in all, we were most satisfied with the members' coöperation. Only one man asked to be excused from giving blood; and two others did not want fat-thickness measurements taken. These three coöperated fully in all the other tests.

There are times when one doctor particularly needs the moral support of the other, especially when (as occasionally happened) some members become disenchanted with the physiological programme. Though we subjected ourselves to all the investigation, we would like to record our appreciation of the examples set by the leader, Commander C. J. W. Simpson, R.N., and by the chief scientist, Mr. Richard Hamilton, who were always ready for their turn, and also, of course, of the examples set by the majority of the members whose willingness spread to the few straggling guineapigs who needed just that extra encouragement.

The main impression should be this: we were dealing with a group of educated men, whose scientific attitude required a logical explanation for the medical research programme. On e satisfied, they coöperated actively and would go to the trouble of giving advice or help with the repair or construction of medical apparatus—thus, for our blood specimens, the mechanics devised an ingenious shaker from a small motor taken from the crashed aircraft, and arranged one of the fuel indicators as a cell-counter.

Unlike the other sciences, the physiological programme affected *all* the men in the party, and it was only reasonable that they should know the whys and wherefores of the regular assaults on their persons.

Trichinosis

Because of the possibility of trichinosis infestation in Greenland, post-mortem specimens were taken from foxes and the husky dogs. The result of this small survey showed that most of our sledge-dogs were heavily infested with trichinosis (Lewis, Masterton, and MacFarlane 1955).

Medical and Dental Problems

Throughout November, December, January, and February the men were confined to the hut because of darkness. For the rest of the year, and especially from April until September, most of them were away from base on the various field surveys. This routine determined policy and activity in the medical sphere.

When in the field the various parties could always make radio contact with a doctor at base; even the dog sledges often carried a small portable wireless which could transmit and receive over a range of 250 miles. On several occasions advice was given by radio—for example, when the aircraft supplying "Northice" crashed, we were able to advise on the care of a man with a fractured ankle. Another time a geologist in the field was suffering from severe toothache, and he was helped by medicine being sent to him with a sledge party.

MEDICAL

The medical problems encountered fell into three groups: (*a*) cold injury, (*b*) trauma, and (*c*) unexpected.

Cold Injury

Snow-blindness.—We had virtually no trouble from snow-blindness. Everyone wore glasses when the sun was more than 20° above the horizon. This period lasted from mid-April until mid-August at a latitude of 80° north; on the high plateau of the ice cap there was less

atmospheric screening of the ultraviolet rays, and the dangerous period was slightly longer. When using optical instruments, one often removed one's goggles in order to focus properly; so on these occasions there was a chance of minor damage to the eyes from the intense glare. Only one man experienced symptoms as a result of this, and on subsequent examination in Britain he was found to have some small retinal scotomata.

The drugs available for snow-blindness were golden eye-ointment (mercurous oxide) and adrenaline and cocaine lamellæ. Lamellæ are unsuitable on field work and it is suggested that ointments should replace these.

Frostbite was rare and the small number of cases we encountered were not severe (figs. 17 and 18). The general absence was due to good clothing technique and an intelligent appreciation of the risks involved in the cold. There were a few cases of desquamation of the cheeks, and almost everyone had minor blistering of the fingers usually due to manipulating instruments with bare hands. No treatment was necessary.

Three cases required attention, and the treatment was similar to that for burns. One man developed blistering of several toes after wetting and then freezing of his foot (fig. 19). This healed with rest and sterile dressings, though the nail of one toe was temporarily lost and there was residual paræsthesia for several months. The other two were rather unusual since they involved the penis. One, when the penis accidentally was in contact with the snow during defæcation; the other when a man was lost in a blizzard at –50°C (–60°F) for over an hour. In both cases the pain was intense, and blisters developed, but the condition cleared within a week.

Exposure.—There were no cases of hypothermia due to exposure. However, dry winds produced several cases of cracked lips, which cleared with the application of lanolin. Colourless lipstick would have been a more convenient remedy, because it can be applied directly from a small pencil.

Trauma

Since heavy vehicles, generators, and aircraft were used, injuries were always expected, but there were virtually none. Even when one weasel plunged 50 ft. down a crevasse the occupants were uninjured. Fortunately, in spite of the constant danger from crevasses, there was no other accident of that kind.

One man fell against his sledge and broke two ribs. He came back to base unaided and made a complete recovery.

Unexpected

Over the two years we met a long list of unexpected conditions. Among the more serious were filariasis, malaria, asthma, cardiospasm, pruritus ani, amblyopia, persistent headache, and petit-mal. Most of these were fully investigated on return to Britain. The filariasis and malaria occurred in two members who had previously been working in the tropics: presumably the physical stresses of the expedition reactivated the infections, which had been dormant for some months. Nine people had recurrent upper-respiratory infections, but the common cold did not occur except to a limited extent at the summer relief when there was contact with men from outside. We also observed herpes zoster, lumbago, supraspinatus tendinitis, constipation, athlete's foot, chronic blepharitis, sycosis barbæ, severe dandruff, and ingrowing toenails.

The above conditions occurred in spite of a careful medical history and examination before leaving Britain. The past story of malaria was admitted, and the member was accepted as a calculated risk; but some of the other conditions were not disclosed by members in their keenness to go on the expedition. Although the list appears formidable, these conditions required little attention, and in fact less than 100 man-days were lost through illness by the whole expedition.

There were also some anxiety states. In one man the cause was domestic trouble and in another it was abnormal fear of the cold. It is the job of the doctor to apply the therapy of common sense as such cases arise; and where there has been loss of life his special job is to see that the men do not brood over a tragedy which often comes very near to them.

DENTAL

Dentistry presented the biggest single problem in therapy. When men are going to be deprived of first-class dental care, it is essential that their teeth shall be most carefully surveyed and treated before leaving home; but, in spite of advice to that effect, not everyone had this done. Several men who had this pre-treatment and who systematically brushed their teeth had no trouble whatsoever. Those who had not had special care before leaving did have some trouble and required treatment.

The dental policy was one of conservation. All the men were seen at least once during the two years, and several were examined and treated many times. We had a foot-operated dental machine, but in view of our inexperience we always used temporary stoppings.

After some trial it was found that gutta-percha was the most satisfactory filling material. A total of 22 gutta-percha fillings were inserted though some of these were in the same cavity. 18 zinc oxide, carbolised resin, and oil of cloves fillings, and 7 copper oxyphosphate fillings were inserted. The copper oxyphosphate caused some pain in one case and the filling had to be removed. 7 teeth were extracted under 2% 'Xylotox' local or regional block anæsthesia. All these teeth were so carious that we could not conserve them. Several of them had pulp infections.

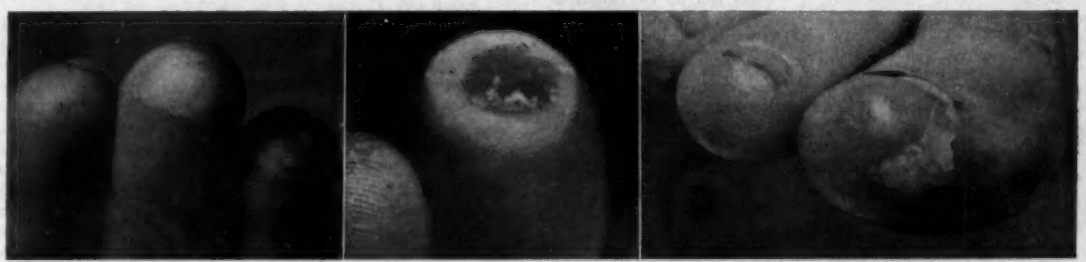

Fig. 17 Fig. 18 Fig. 19

Fig. 17—Frostbite of the middle finger. Mild cases produced a blister similar to a burn. They were caused by handling instruments like cameras in the cold.

Fig. 18—Frostbite of the middle finger. More severe, but it healed, without scarring, after treatment with sterile dressings.

Fig. 19—Frostbite of the 1st, 2nd, and 3rd toes following accidental wetting of the boots and then freezing. Note on the 1st toe the œdema and blistering under the toenail. The condition healed in a week, except for the loss of the toenail and temporary paræsthesia.

In a number of cases where the cavities were very small or shallow no fillings were inserted. The caries was removed and the patient advised on strict dental hygiene.

It is difficult to be sure whether caries was accelerated in such conditions, but our impression is that it was not. Most of the trouble was due to lack of proper care at home.

What is the effect of the Arctic climate on the teeth? We did not find that fillings dropped out because of the climate. Does the cold produce pain in filled or devitalised teeth? Pain is more likely to be caused by ice-cream or an iced drink than by quiet inspiration of cold air through the mouth. The only time when cold air may cause pain is when one pants and rapidly draws cold air over the front teeth. This only happened once, in spite of men spending long periods outdoors at temperatures of –40°C (–40°F) and lower.

Like those of previous explorers, our findings tended to be equivocal. There is scope for a carefully planned dental survey over a long period under Polar conditions.

Casualties and Escapes

On a polar expedition there is a constant threat of injury or misfortune. On the whole we were lucky, except for one tragic death. In the spring of 1953, one of the topographical surveyors, after taking sights from a mountain-top, was descending a steep snow slope when he missed his footing. He lost control and fell to his death among the rocks 300 ft. below. This untimely death of a very good friend brought home to us the dangers of the country, which we tended to play down through familiarity.

1. While we were operating on the lake in the summer there was always the danger of immersion. The suddenness of a squall could take us completely unawares in our rather unseaworthy flat-bottomed dinghies. Two men were nearly drowned when they were trying to salvage the damaged power-boat. They were in the water, which was at 1°C (33°F) for ten minutes. Survival-time in water of this temperature is about thirty minutes (Glaser 1950). After this incident the men always wore life-jackets.

2. The plane crash on the inland ice might have been more serious but for the skill of the pilot.

3. During the first winter a man caught his clothing in the flywheel of a generator, but he sustained only severe bruising of his forearm.

4. Another accidentally shot himself in the hand with a small-calibre pistol. The bullet penetrated the base of the proximal phalanx of his right index finger. He made an excellent recovery without any gross deformity of the bone and he fulfilled his duties as vehicle mechanic right to the end of the expedition. On his return to Britain radiography showed a well-healed fracture of the base of the bone. There was some slight articular irregularity.

5. As already mentioned, a weasel fell 50 ft. down a crevasse. What saved the men was that they were anchored to their seats by safety-belts which prevented their being pitched the further 100 ft. to the bottom.

This weasel was towing a sledge trailer containing two tons of petrol cans, skis, and numerous other pieces of equipment. As the trailer followed, its contents hurtled through the back of the weasel and out through the windscreen, missing the two men by a hair's breadth.

6. In the summer of 1953 a Sunderland flying-boat was blown ashore in a squall and badly holed below the water-line. It was patched with great difficulty. During the take-off there was great danger of water forcing its way through the patch and enlarging the hole. The nose would have filled with hundreds of gallons of water which would have caused the plane to nose-dive and sink. However, the patch held and she took off satisfactorily. As she left our skies we could see a trail of water still pouring from the damaged hull.

7. One of the crew of "Northice" was lost in a blizzard for ninety minutes before he saw the hut lights again. He sustained frostbite of his penis.

8. During the second winter a serious fire broke out at "Northice." Several generators were destroyed and one man was slightly burned. Fortunately the fire did not spread to the living hut, or the three men might easily have been forced to take to tents for the remainder of the winter, which would have been a very great hazard at such extreme temperatures. The lowest recorded was –66°C (–87°F).

9. The final lucky escape came when a weasel exploded on the inland ice. The driver was blown clear without a scratch, but the weasel was a total wreck.

The Last Phase

In July, 1954, all the field parties reassembled at Britannia Sø, which had thawed again, and in August the men were evacuated by Sunderland flying-boats to the United Kingdom. A small party which had traversed the inland ice arrived back a week earlier, having left Greenland by air from the West Coast.

At Britannia Sø, before the last men left the base laboratory, a comprehensive first-aid kit and instructions were laid out in the sickbay; similarly, there was a good supply of food and fuel. In an emergency, there would be shelter for travellers, either by land or air, since the hut position will be marked on local maps. There was some discussion whether a small radio transmitter should be left; it was decided (perhaps unfortunately) not to do this.

Back in Britain, we carried out follow-up tests at University College and University College Hospital. This, incidentally, turned out to be administratively complicated because the men soon dispersed from London.

The Doctor's Rôle

From what we have written it is clear that on an expedition the doctors should be prepared for an unexpectedly wide variety of medical problems, besides doing justice to a research programme. On the British North Greenland Expedition we doctors enjoyed two special advantages: first we were in radio contact with advisers in Britain, and this continued interest in our progress gave us a pleasant fillip. Secondly, in Greenland itself there was mutual confidence and complete loyalty to each other.

As always, the doctor must be completely approachable, but he must not take sides in minor bickering. Once he is accepted as a fair-minded impartial person, he will be asked to give his advice on matters of general policy; but he should at all times be on guard against having his answers exploited to suit "axe-grinders." In any case he may be offered many paramedical duties, the flattering approach to which is usually prefaced by "You're a doctor, you should know about . . . cooking, rations, ventilation." The doctor's advice will be sought also on first-aid for the dogs, and other veterinary problems such as sexing newborn puppies, or the best way to cut up a musk ox.

Using our anatomical knowledge, we participated in a dissection for the pot of the first musk ox that was shot, and the cutting up took us three days in freezing conditions. (A trapper would have done the job efficiently in half an hour!)

There are also non-medical duties; for example, it is expected that you should willingly help the radio man trying to put up an aerial mast in a blizzard; or go as a companion on short sledging trips if you can be spared from the laboratory. This is merely to reciprocate the coöperation of these men who have acted as your subjects.

On an expedition, a medical officer should have a second string to his interests, such as physiological research or biology, and he should not waste his good professional training on jobs which could be done by a less "expensive" man. Doctors often seek expeditions for the adventure of doing a completely different job. But on a *scientific* expedition, the doctor should take his place as a man of science.

If he is the only doctor, his first duty is medical treatment, and if there are casualties a research programme will have to be jettisoned. But we cannot emphasise too strongly that if *medical research* is on the programme it must have full-time priority. Ideally, as on our expedition, the medical officer should be incorporated into the research programme as a colleague of the physiologist.

Selection of Personnel

A selection committee should be cautious about aiming for the "expedition type"; in practice there is no such person. We agree that there are certain desirable characteristics, such as a good sense of humour, ability to get on with other people, and honesty; but we feel that more attention should be paid to some subtleties that might be unnoticed unless specially looked for. For instance, a tendency to pompousness and over-confidence might become most embarrassing and dangerous on an expedition, while a man who tends to be mildly querulous at home and escape notice, might, in the stress of a crowded winter hut, appear to his fellows almost paranoid. On a Polar expedition one can occasionally observe the person who thinks he is the only man doing any work: in the small community a leaning to the self-righteous may become a pathological streak. Finally, any personal animosities existing at home between two prospective members should be sufficient cause to disqualify one of them. On an expedition, and especially during three months' winter darkness, mole-hills rapidly become mountains, and there is the possibility that certain personal attitudes of one man to another might become unmanageable.

A problem arises in the selection of men for menial jobs. Should one, for example, select a handyman for the odd jobs of limited skills, or take on a volunteer of wider education and capabilities? Although the latter would be of more positive use in certain circumstances, he is nevertheless more likely to become unhappy with his menial tasks over the long period of one or two years, however good his intentions were at the beginning. We feel that, on a long expedition, men should be appointed to jobs which they are used to doing, and take pride in doing well. Applicants must be disabused of any suggestion of the glamour of a Polar expedition when they are interviewed. What sounds glamorous before setting out proves often to be tedious, and all the more irksome in the uncongenial surroundings. All the members must take turns with the really unpleasant jobs like emptying the toilet buckets, and it would be a mistake for scientists, for example, to be absolved from these chores. Men must realise also that when they return they will have much hackwork in writing their reports.

When choosing members, one should apply the yardstick: "will he do justice to his job?" Then conventional social strata fall away as being irrelevant, and there will be the added spice on the expedition of having men of different backgrounds and education. The most important single attribute is competence. Selecting a person who is really excellent at his special work is the safest risk, provided he has no serious personality defect. A man may use his charm of personality to compensate for inefficiency; and he may well get away with it up to a point. But, as an expedition progresses, it becomes noticeable that a member is respected for the manner in which he does his work, however humble the job. Thus an efficient carpenter becomes more acceptable than, say, a doctor of limited capability. Finally, it should always be remembered that the men finally chosen will be a group of *people*, not supermen; and that mentally and physically they will be heirs to the same weaknesses.

These comments are made with diffidence, because we can hardly stand at a distance judging our colleagues in situations in which we were intimately connected; and we accept that we ourselves may well fall short of our own criteria. However, with this in mind, we have offered our opinions on the basis of our own experience. We emphasise also that we are not proffering anything new or revolutionary. The purpose of this section is to suggest some lines of guidance for future occasions. We do not think that the selection committee of the British North Greenland Expedition made mistakes, for in retrospect we see that they did the job extremely well.

It is very difficult to handle a large number of applicants resulting from nation-wide publicity. In practice it is more feasible to make inquiries at a known source such as zoological schools of universities. However, by thus restricting the choice, one may unfortunately overlook an even more competent man somewhere in the country.

Some Further Recommendations

Apart from these recommendations, we learned a number of lessons for future ventures.

1. In the medical examination, particular attention should be paid to the past history of the candidates, and if possible a confidential report should be obtained from the family doctor. While one should aim for fitness, physique per se should not be the first consideration, since great muscular development, though useful, is not essential. One cannot predict how members will stand up to the Polar environment.

2. It is imperative that before departure there should be plenty of time for preparation and planning The personnel should know a year beforehand that they are going, and have perhaps three months full time devoted to expedition matters immediately before setting off.

3. It was very obvious to us, taking part in the stevedore work, that more mechanical aids should have been available for unloading and carrying our stores at Young Sund or Britannia Sø. Even a wheelbarrow would have been invaluable. With so many types of fork-lifters on the market, one could have been found which was suitable even for our sandy and pebbly terrain.

4. When men spend half their time in a hut, it is essential to have it roomy and well designed. We should have liked more individual privacy, better ventilation and sanitary arrangements, and better doors. The facilities for washing and water heating, and the latrines, must be adequate.

5. The physiology laboratory arrangements were good except for the lack of a small distilled-water plant.

6. In the sickroom there must be strong emphasis on good lighting and a comfortable bed-cum-examination couch.

7. Food at base could have been more interesting. Tinned products were used too much. We could have taken a variety of articles that would have kept well in the cold. The sledging ration was good but it was monotonous and badly packed.

8. On the medical side many traditional items can be eliminated, and with plenty of time and consultation with colleagues during planning a satisfactory kit can be compiled.

9. The constant hazard of carbon-monoxide and petrol fumes in close quarters makes it essential to have efficient detectors. Fire is a regular risk, and there must be enough extinguishers.

Success?

When the second-year party returned in August, 1954, it was a heartening sight to see the dozens of notebooks, specimens, and hundreds of rolls of film packed and sealed so that they would float if in any accident they fell into the water.

We are often asked naïve questions about the expedition, and this is largely because our activities were reported exclusively to a newspaper of limited circulation, and also because of our uneventful return. Ironically, had we met with disaster, national interest would have been aroused. But it was not our intention to participate in heroics.

Apsley Cherry-Garrard (1948), who was a member of Scott's last expedition, has written most eloquently about this aspect.

"... whilst we knew what we had suffered, and risked better than anyone else, we also knew that science takes no account of such things; that a man is no better for having made the worst journey in the world; and that whether he returns alive or drops by the way will all be the same a hundred years hence if his records and specimens come safely to hand ..."

Judged by this, we hope that we may say that our venture to the Arctic was a success.

For permission to reproduce photographs, we are grateful to Dr. C. B. Bull (fig. 8) and Dr. C. M. Slesser (fig. 14). The people who have helped and still are helping us are too numerous to mention separately. However, we should like to thank specially the following bodies who sponsored our work: the British North Greenland Expedition Committee, the Medical Director-General of the Navy, the Medical Research Council, and University College, London.

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Special Articles

DISTRICT NURSING

THE CHANGING SCENE

LIKE the family doctor, the district nurse is finding that her duties are changing with the times—not only with the advent of the National Health Service but with new drugs, and with the growing opinion of physicians and surgeons that bed is a dangerous place for anybody, young or old, who is not too ill to get out of it. The Queen's Institute of District Nursing have lately published a special study,[1] undertaken with the help of a grant from Boots Pure Drug Company, and carried out by Miss E. A. B. Davis, a Queen's visitor. She not only reviews the changing patterns of the services, and the numbers of district nurses and other personnel likely to be needed, but considers the proper functions of these various workers, and suggests how the time and energy of district nurses might be used more economically.

The most striking change in pattern has been the great increase in injections given by district nurses. This means that the numbers of visits paid have gone up, too; but the average time taken over each visit has decreased, and so have the numbers of visits per patient. These changes, largely the results of modern chemotherapy, have been associated with a greater number of telephone calls, and messages to be transmitted to nurses, and a larger turnover of patients. Thanks to the practice of earlier ambulation, nurses in training nowadays get little experience of bedfast patients. Dr. J. L. Burn [2] has noted that the new recruits to district nursing are not as well trained in the care of such patients as their forerunners, and Miss Davis bears this out. On the other hand, since patients at home are nowadays encouraged to get up as soon as possible, the actual *amount* of skilled long-term bedside nursing needed is less than it used to be. The older people in our population are doubtless steadily increasing in number; but while they remain active they need the help of the home help, the bath attendant, the physiotherapist, and the chiropodist more often and more regularly than that of the district nurse.

In some places district nurses are nowadays being asked to cooperate with the doctors in health centres, or centres of group medical practice. Miss Davis studied the arrangements made at four health centres—Woodberry Down at Stoke Newington, the William Budd Centre at Bristol, Sighthill at Edinburgh, and Darbishire House at Manchester.

The first was staffed by nurses attached to the clinic, and the district nurses had "little contact and no function" at the centre. At the second the district nurses, though they have no duties at the centre, call daily for messages and are in almost daily touch, in the staff room, with the general practitioners, health visitors, and clinic nurses of the centre, as well as with the midwives working in the area. At Sighthill district nurses work at the centre for a 7½-hour day on some days of the week, treating ambulant patients, preparing equipment, sterilising dressings, and dealing with occasional emergencies. On their other days they work on a nearby district. Some of the work—such as packing and sterilising drums, weighing patients, and preparing equipment in treatment rooms and consulting-rooms—could, Miss Davis thought, have been done by less skilled staff. At Darbishire House, three nurses on the staff of the district nursing association attend in rota during surgery hours, and an attempt has been made to allocate a given nurse to a given doctor.

In group medical practices, it is unusual for the district nurse to attend daily; but sometimes she holds a minor-ailments clinic at the doctors' surgery, or a doctor may use the nurse's clinic or district room as an out-surgery. Often the district nurse attends the doctors' surgery for special sessions, such as antenatal or immunisation clinics.

Night calls are rarer for district nurses than for doctors, but some local authorities provide a separate staff to give late injections and do some night nursing. The city of Gloucester employs two permanent night nurses. In some areas rotas of suitable people—retired or married nurses, or assistant nurses—are maintained, who can be called on for night duty; but a more usual arrangement is to provide sitters-in, often organised by the home-help service. The weakness of this last system is that there is no real link between the sitter-in and the district nurse who comes by day.

Taking the picture as a whole, Miss Davis concludes not only that the pressure on district nurses is rising, but that the pattern of their work in future is likely to include more injection therapy, the care of more elderly patients with terminal illnesses (long or short), more nursing of patients discharged early from hospital, and of children, together with attendance at some kind of centre of group medical practice, and possibly night visiting and night nursing. To meet these changing needs the district nursing team, she suggests, might include State-registered nurses (S.R.N.s), mainly with district training, about 5% of them to be male nurses; S.R.N.s without district training, mainly as relief staff; State-enrolled assistant nurses (S.E.A.N.s) with district nursing preparation, in the proportion of 1 : 5 S.R.N.s; nursing aids as voluntary helpers; and bath attendants, night attendants, and home helps. The patient should be further supported by a laundry service (of enormous value in conserving the energy of elderly people who are looking after other elderly people), chiropody, physiotherapy, diversional or occupational therapy, and the loan of necessary equipment.

The time and energy of the nurses themselves could be greatly conserved, she says, by the provision, in every area, of adequate transport: and this would also mean better care for patients. In areas where transport facili-

1. The Future Scope of the District Nursing Service, and the Personnel needed. Obtainable from the Institute at 57, Lower Belgrave Street, London, S.W.1.
2. *Nursing Times*, 1954, **50**, 1425

ties were poor she found "either that very ill patients received less care than they needed, owing to the difficulty of visiting twice daily or more, or the care received by any patient was less comprehensive than it might have been. . ." Finally, nurses could be spared much unnecessary writing and duplication of reports and figures. Some areas have already begun to introduce simplified systems of record-keeping, and she glances hopefully at the possibility of central statistical departments where modern machinery could do the adding and analysing now laid on the overburdened nurse.

Public Health

Weil's Disease

THE number of cases of Weil's disease reported by public-health and other laboratories in England and Wales during the past few weeks has been unusually great. The total number of cases reported by laboratories in 1953 and 1954 was 98 and 106 respectively, but during August this year there were 31 cases. Of these, 21 were due to *Leptospira icterohæmorrhagiæ* and 3 were fatal; 8 were due to *L. canicola*; and in 2 the type was unknown.

In the majority the source of infection was not found, but in those due to *L. icterohæmorrhagiæ* the proportion where the patient gave a history of occupational risk was unusually low, whereas 6 had recently bathed in rivers. Hot dry weather may have contributed to the increase in leptospiral infections by encouraging bathing and possibly by increasing river pollution. Cases of Weil's disease can easily go unrecognised, and the possibility should not be forgotten in the diagnosis of febrile disorders, particularly those with conjunctival injection, petechial hæmorrhages, meningeal symptoms, renal symptoms, or jaundice.

Dysentery in an Infants' School

In his report for 1954, Dr. G. Hamilton Hogben, medical officer of health for Tottenham, describes an outbreak of Sonne dysentery in an infants' school. The original source of the infection is thought to have been 2 children who had a gastro-intestinal disturbance the day they returned from holiday. No secondary cases were reported from contacts attending other schools (all for older children) whose fæces were found to contain *Shigella sonnei*. In its early stages the outbreak was almost explosive, suggesting the possibility of a food borne infection; but of the children who fell ill in the first week only some two-thirds had school dinners, and the children had no part in serving the meal. Dr. Hogben suggests that the infection may have been spread by contamination of straws for drinking milk. The older children took the caps off the bottles and distributed these straws; and the children who first fell ill may have done this.

Infectious Diseases in England and Wales

Disease	Week ended August 6	13	20	27*
Diphtheria	5	4	3	3
Dysentery	392	373	287	374
Encephalitis:				
Infective	4	4	5	4
Postinfectious	2	..	1	3
Food-poisoning	361	371	388	271
Measles, excluding rubella	9975	8088	5569	3745
Meningococcal infection	11	28	15	13
Ophthalmia neonatorum	26	33	29	34
Paratyphoid fever	24	19	17	25
Pneumonia, primary or influenzal	188	194	202	153
Poliomyelitis:				
Paralytic	146	194	198	198
Non-paralytic	161	164	150	164
Puerperal pyrexia	253	199	260	271
Scarlet fever	196	234	236	240
Smallpox	..	..	..	..
Tuberculosis:				
Respiratory	512	604	575	597
Meninges and C.N.S.	11	16	13	11
Other	60	77	82	69
Typhoid fever	..	2	2	11
Whooping-cough	1556	1860	1684	1702

*Not including late returns.

In England Now

A Running Commentary by Peripatetic Correspondents

WE were two heart cases and we were put in a small two-bedded room off the main ward because complete rest and quiet were essential for our recovery.

At irregular intervals all day and sometimes at night the steriliser in the operating-theatre let off steam with a noise like a railway engine at a terminus. The thin partition which shut us off from the big ward of 35 beds let in a lot of the noise—the resounding tap of leather heels on polished floors, especially at night, and the sound like Underground trains made by the continual moving of the heavy screens throughout the day.

Between 6 A.M. and 9 P.M. twenty-four members of the hospital staff entered our own quiet little room 144 times, banging the swing door 67 times. This means that the door was opened or closed once every six minutes. Actually it was sometimes opened much oftener and sometimes no-one came in for a whole hour. During these rare periods we tried to sleep. One of us was wakened by two nurses to tidy her bed; when she protested "But why, just when I've just got off to sleep?" the answer was "But you must be made comfortable!" The other, after an exhausting day, had been given a sleeping-tablet early and was sound asleep when she was shaken awake by a nurse to know if she wanted hot milk or 'Ovaltine.'

With the help of sleeping-tablets we managed to get some sleep at night despite the competing noises, the nurse coming in to see if we were asleep or to clash the metal tablet that clipped our case-sheets onto the end of the iron bed, and the fact that one of us talked in her sleep and the other snored.

Patients never agree with the doctor, and we cannot agree that complete quiet was essential to our cure. For we are both well on the way to recovery, thanks to skilful and devoted medical care—and perhaps to our sound constitutions.

* * *

The Calgary Stampede is an important annual event in the West. The whole population of the town and of much of the Province of Alberta goes to the Stampede in the way that Lancashire folk go to Blackpool for their wakes weeks. Nobody has time to go to see the doctor, but the doctor may well receive an extremely urgent call to sew up little Willie's foot. Everybody goes to the parade on Monday morning, and it is a very good parade. Though not in the same class as the Lord Mayor's Show, the mayor of Calgary is to be seen wearing a large white hat, riding upon a spirited charger, and dressed like a cowboy at a party. Thereafter, during the mornings, the main streets may be roped off a block at a time for the bands to play, for the clowns to clown, for the trick motor-cyclists to motor-cycle trickily, for the square-dancers to dance their squares, and for the other performers to act their Stampede rôles. And the townsfolk and the country folk, themselves dressed in cowboy costume, the fancy dress of the West, look on and admire the spectacle.

At one street corner the traffic lights were changing unwearily from green to amber and to red, and in the heat of the brilliant mid-morning sunshine the crowd stood around to watch the dancers dance to the music of a Western band playing upon the back of a parked truck for bandstand, and relayed—and distorted—by multiple loud-speakers from all four corners of the truck in all four directions of the cross-roads. Then came the Wheelchair Dancers, the square-dance club of the Calgary branch of the Alberta Handicapped Association, wearing huge white cowboy hats and vividly coloured shirts with brilliantly embroidered broad collars and cuffs, and with coloured paper decorating the wheels of their chairs. The average age was not young. One dancer had lost both legs above the knees. Others had withered limbs, and some were victims of past polio. Most wore leather gloves upon the hands that spun the wheels of the chairs. Every eye was keen and every face was bright with enjoyment as the dancers pushed their chairs in time with the music through the pattern of the square dance in all its local intricacies.

It was the most memorable sight of a remarkable Stampede, and an impressive example of enjoyment in face of disability.

* * *

" 'Vat's your name?' she asked me, in that German way she had of speaking. 'My name is Dick.' 'And your other name?' 'My mother calls me Dick.' That shut her up all right. I never did like that woman from the first."

The patient who related this to me in the ward has not treated the consultants with quite the deference that the nursing staff would wish. Scarcely surprising considering how, as a young chorister, he dealt with Queen Victoria.

* * *

Gavels seem to be growing in number; and certainly a blow with a gavel is much more dignified than a tap on the table with a fountain pen. But as a means of halting an ebullient speaker who has exceeded his allotted span, they do not seem to be effective unless the audience supports the chairman with vigorous hand-clapping—distinguishable from applause.

A common cause of getting into difficulties with a 15-minute communication is that the first 10 minutes are devoted to other people's work, after which there are only 6, 7, or 8 for one's own. The very fact that the speaker has perfected what he has to say may undo him, for a slight slip in his polished phrases may make him repeat, or (worse still) explain with "What I meant to say is . . ."; and thus the whirligig of time overtakes him.

If a quarter of an hour is allowed it is fatal to try to fill the unforgiving 15 minutes with 900 seconds' worth of distance run. The only way in which to be sure of finishing on time is to prepare what one has to say to last 12 minutes, thus allowing 1 minute for turning to one's text to explain diagrams, &c., 1 minute for laughter, and 1 minute for applause.

When everybody does this, gavels can be made of ivory and revert to white elephants.

* * *

Your annual educational number is of great value to those medical students and newly qualified men who are bewildered about which way to go next; but you offer little or no guidance to parents who are anxious to ensure that their young children shall in due course be accepted for training in medicine. Could you now tell us which schools or which kinds of school are most efficient at producing boys and girls with the qualities and attainments required for entry to a medical school? We mention this because it is not always appreciated that the selection of the correct school requires the prior selection of the correct prep school, and there is severe competition to enter certain prep schools at the moment. Indeed, we have heard that children are not accepted at one particular prep school unless they have come from one particular pre-prep school, are able to read and write, and have a working knowledge of one foreign language at the age of 7. Our own problems at the moment are—What is the best age at which to commence private tuition in passing intelligence tests, and what is the best way to prepare one's children for nursery school? We should be most grateful to you for your advice.

ANXIOUS PARENTS.

* * *

Israel is a land where peoples of widely divergent cultures mix; some of the newcomers from Eastern lands have a pattern of life which is very different from Western European standards. But they learn fast.

About two years ago, a Yemenite woman from Southern Arabia came to a maternity hospital of the Workers' Sick Fund to be delivered. She was conducted into the receiving ward and invited to lie down. She lay on the floor: the bed was a piece of apparatus outside her experience. However, she was cajoled to lie on the bed; and then the nurse said "I'll call the doctor to examine you." This distressed her; how could she submit to examination by a strange male? "Don't worry," said the nurse; "I'll call the midwife, then." The midwife came; the baby came; in due course mother and infant left the hospital.

About two years later she returned for the same purpose. On being shown into the receiving ward, she climbed at once on to the bed. "I remember you," said the nurse smiling conspiratorially at her, "I'll call the midwife." "Midwife indeed!" snorted the mother, "Why am I worse than any of the others? The doctor is good enough for me!"

Letters to the Editor

SYSTEMATIC LECTURES

SIR,—Whenever the need for shortening and simplifying the curriculum is discussed someone suggests that systematic lectures should be abolished, and there has been a growing fashion to malign them as useless and a waste of time. As one responsible for teaching, and as a believer in good systematic lectures, I therefore welcome Dr. Clark-Kennedy's article (Aug. 27) supporting them, for the very sound reasons that "the average textbook is far too indigestible for ordinary human consumption. Lectures lubricate and add perspective to it. I believe in good lectures voluntarily attended." With these views I most heartily agree. The fact that, in your leader of the same date, you suggest that these lectures should be eliminated merely goes to show how difficult it will be, even in a single school, to gain agreement on how best to trim the curriculum. For a long time now I have believed that those who decry systematic lectures are those who are bad lecturers, either because they deliver them badly, or because they do not like the effort it requires to prepare really good ones, or because they make them too detailed in scientific facts without showing the practical application of these facts to our essentially practical discipline, which is an applied science if there ever was one.

I believe, too, that much of the opposition results from a too rigid interpretation of the word "systematic," regarding these lectures as an attempted substitute for textbooks. As I see it, they should be signposts to reading and ward work, an interpretation by someone of much experience illustrated from his own practice, and an occasion for an assessment of new views and discoveries. But they must be carefully prepared, delivered in a voice that can be heard in the back row and without monotony; and attendance must be on a voluntary basis.

With this understanding of the proper function of systematic lectures, and believing that different students have different types of memory, I feel that my lectures are serving a useful purpose if a third or more of any group of students chooses to come to them.

Department of Surgery,
University of Birmingham. F. A. R. STAMMERS.

SLIPPED FEMORAL EPIPHYSIS

SIR,—Your annotation of July 30 raises, among other problems, that of treatment—a subject of considerable controversy during the post-war decade. Some of the statements made would, I think, meet with frank disagreement.

"Attempts to reduce the displacement by traction or manipulation . . . have fallen out of favour."

Manipulation—perhaps movement is a better term—of the hip under anæsthesia, with radiological control, is essential in investigating the mobility of the epiphysis and for its reduction.

"Most surgeons prefer to apply traction only when the slipping is acute."

Traction is of doubtful value in treating the acute slip, and if the limb is postured in internal rotation and flexion, or the weight is too heavy, damage to the blood-supply is an obvious danger.

"Insertion of a Smith-Petersen nail . . . produces reasonable fixation."

Such a pin is unnecessarily large and tends to separate the epiphysis from the metaphysis, thus damaging the blood-supply at the time of its insertion.

During the last eight years the following plan for treating recent slipping of the upper femoral epiphysis

has evolved from the successes and failures of some 40 cases.

A case of recent slipping of this epiphysis is an emergency for which the patient should be admitted to hospital and put to bed forthwith. At the earliest convenience an anæsthetic is given and the hip gently moved, under radiological control, to ascertain any mobility of the epiphysis.

If the epiphysis is mobile, it is reduced and two or more pins are inserted.

If the epiphysis is immobile and the degree of slip slight, the deformity is accepted and pins are inserted.

If the epiphysis is immobile and the degree of slip severe, the patient is returned to bed, because no immediate treatment is indicated. The later treatment of this type of case is controversial, and here I would agree completely with your annotation. Open anatomical reduction and subcapital or cervical osteotomy give good results in most cases, but there is risk of aseptic necrosis and ankylosis of the joint. Subtrochanteric osteotomy is safe but not ideal. The hip left as it is, with a severe degree of slip, gives a marked limp, permanent disability, and the possibility of early degenerative changes.

Early in this group of cases I abandoned the Smith-Petersen pin in favour of the Moore's type of pin, which can be inserted with less danger of pushing the epiphysis away from the metaphysis and with less trauma to the epiphysis itself.

London, W.1. PHILIP NEWMAN.

SEQUELS TO ANÆSTHESIA

SIR,—Similar cases to those recorded by Dr. Bourne (Aug. 6) are not infrequently seen by those anæsthetists who work in large dental departments. Of necessity the patients are not premedicated and, when nitrous oxide is administered alone, satisfactory operating conditions are only achieved by severely limiting the supply of oxygen. Dr. Bourne's efforts to secure abolition of this type of anæsthesia are to be greatly encouraged.

However, for your leading article in the same issue to state that general anæsthesia for the elderly "should be light [and] devoid of nitrous oxide" is surely creating a misapprehension. In many elderly patients who are suitably premedicated it is possible to produce satisfactory first-plane anæsthesia without restricting the oxygen supply to less than 21%. I am aware of no work which suggests that nitrous oxide per se is dangerous, and it would seem fairer therefore to incriminate the method rather than the agent. Providing such pitfalls as obstruction, underventilation, and hypoxic mixtures (notably those resulting from low flows of gases used with CO_2 absorption techniques) are avoided, nitrous oxide can provide safe and satisfactory anæsthesia for a great variety of operations in the elderly.

Massachusetts General Hospital,
Boston, 14, U.S.A. M. K. SYKES.

SIR,—As a dental surgeon, may I thank Dr. Bourne for his excellent remarks on dental gas and cerebral palsy. In general dental practice, prolonged anæsthesia is more difficult than it may seem. As one general medical practitioner said to me, "one never knows one's patient's reaction to nitrous oxide and oxygen until after the event."

The following case may be of interest.

A nurse, on whom I had previously operated for single teeth, caused me great anxiety when I was about to remove 5 teeth, using ordinary nasal (not intubation) nitrous oxide plus oxygen (5%) anæsthesia. After removal of 3 very difficult teeth in about 3 minutes' anæsthesia, her colour suddenly changed from pink to grey and breathing stopped, with no apparent heart-beats. The anæsthetic was stopped immediately; full oxygen was switched on, and artificial respiration was applied. The patient breathed in about 3 minutes with feeble heart-beats returning. Then strychnine gr. $^1/_{30}$ was administered hypodermically. The patient remained unconscious for half an hour, and normal heart-beats and breathing returned after a further hour and a half. Altogether, she was in my surgery for two and a half hours, after which she was able to walk to a car.

The patient had had a similar episode when she was in training at hospital, but did not mention this before the operation.

West Bromwich. H. M. BRETTELL.

SIR,—Four years ago, one of us (D. G. H.), then a junior resident anæsthetist, gave gas to a 42-year-old cretin for incision of an abscess of neck.

The patient was supine, and the gas was given from a Boyle's machine starting, in the usual way, with nitrous oxide alone, flowing at 10 litres per minute, oxygen being withheld until consciousness was lost. Oxygen was then added at a concentration of 15%; but very soon afterwards—about two minutes from the beginning of the gas and at the moment when the incision was made—respiration, which until then had been free and unobstructed, suddenly failed and with it the pulse. The patient became deathly pale. Artificial respiration with oxygen was given through an endotracheal tube and nikethamide was injected into the heart, but the patient remained pale, pulseless, and without spontaneous respiration. The circulation was restored by cardiac massage through an incision in the epigastrium, and later respiration returned. The patient, however, did not require any anæsthetic for closing the epigastric incision and remained in coma for some time after he had been admitted to the ward. Eventually, he recovered completely.

For more than a year now, for anæsthetising out-patients, chiefly for dental extraction, we have used cyclopropane in the manner described by Dr. Bourne.[1 2] Our experience of this method does not amount to more than about 250 cases, yet already we are impressed by its advantages—particularly its simplicity and effectiveness. Induction and recovery are rapid, and, since there is no need to restrict the oxygen, it would not surprise us if it turned out to be a safer method, especially in the hands of less experienced anæsthetists, than the conventional one with nitrous oxide.

Lambeth Hospital,
London, S.E.11. D. G. HURTER
CHRISTINA M. JONES.

BREAD

SIR,—The perennial subject of white or brown bread has recently appeared in a challenging form in a Medical Research Council report by Professor McCance and Dr. Widdowson [3] and in an article in *The Lancet* (July 30) by the same authors.

The report describes feeding experiments made in 1947 and 1948 among children in two orphanages in Germany. The experimental diets were given for one year and extended in the case of some of the children for another six months. This is equivalent in terms of length of life to experiments in rats lasting about two weeks, a length of time not sufficient to exhaust reserves. There is no mention of the activities in the daily lives of the children; apparently they were free from hard work and other stresses.

The authors state that the results of the experiments were unexpected because, under the conditions of the experiments, bread made with 70%-extraction flour gave results in terms of growth and health as good as bread made with 100% or 85% extraction flours or with 70%-extraction flour reinforced with vitamins.

These results would not have been unexpected by nutritionists who have had long experience in South-East Asian countries, where many children are brought up on diets having more deficiencies than the analyses show for the diets given to the German children.

1. Bourne, J. G. *Proc. R. Soc. Med.* 1954, **47**, 416.
2. Bourne, J. G., Morton, H. J. V. *Lancet*, 1955, **i**, 20.
3. Widdowson, E. M., McCance, R. A. *Spec. Rep. Ser. med. Res. Coun., Lond.* no. 287.

A study of deficiency diseases suggests that it takes years to exhaust the reserves of vitamins in the human body in those leading sedentary lives, provided their diets are only moderately deficient in vitamins so that they continue to take a considerable proportion of their needed vitamins; but the exhaustion of reserves is far more rapid in persons subjected to hard work and exposure.

At one time in Malaya the mortality from beriberi was very high among hard-working Chinese coolies, who were exposed to the weather and lived under overcrowded conditions. The cause of the beriberi was highly milled rice; but the disease had a very small incidence among sedentary workers who lived on the same kind of rice, and it did not occur among better-class Chinese who were able to reinforce their diets with many other foodstuffs.

The death-rate among civilians interned by the Japanese in Changi camp in Singapore was little or no higher than it would have been if they had not been interned. Although their diets were obviously deficient in several respects there were few if any signs of malnutrition among them at the end of the first year apart from some loss in weight, and many of them were overweight from good living before they were interned; but at the end of the fourth year the majority showed marked signs of malnutrition, and probably few would have survived for another year. A very different condition of affairs occurred among the prisoners-of-war forced to labour on the Burma-Siam railway and working under exposure to weather. Although their diets appear to have been somewhat more generous than those in Changi camp the majority of them died and the basic cause was malnutrition.

Before and during the 1914–18 war there occurred in East Africa an appalling death-rate among indentured labourers recruited for railway construction or for the "carrier corps" of the army. They were fed almost entirely on maize meal. Deaths from malnutrition and intercurrent infections started within three months of recruitment. The same death-rate did not occur among camp boys having similar diets, light work, and little or no exposure.

Some years ago the Medical Research Council sponsored an investigation on scurvy for which 19 men and 1 woman volunteered to take the planned diets. They were placed on diets containing not more than 1 mg. of ascorbic acid. They were divided into three groups; those of two groups had supplements of ascorbic acid, and the 10 men of the third received no supplement. Six months passed before there were any signs of changes in the gums, and there were no complaints of ill health that could be attributed to the diets. After nine months one man of the third group had a serious heart-attack. This is a very different picture to that drawn for us by Captain Lind and many other observers of the high morbidity and mortality rates from scurvy in the sailing-ships of their times. There are records of many seamen being crippled with the disease within two or three weeks of leaving port. It appears that the reserves of ascorbic acid in the body are quickly exhausted under conditions of hard work and exposure.

In their article (p. 210) Professor McCance and Dr. Widdowson say: "The results were unexpected because general opinion and also scientific opinion had been wrong in laying so much emphasis on the value of high extraction for all persons under all conditions." General opinion is never universal, and scientific opinion would never subscribe to such an exaggeration.

Scientific opinion is that there may be circumstances under which bread enters very largely into the diets of a population, and then the majority are likely to benefit by the use of high-extraction flour; but where the diets contain ample B-vitamins in other foodstuffs it is unimportant whether the bread is prepared from high or low extraction flour.

The war-time flour was planned for the whole population hoping that it would be sufficiently nutritious to maintain the mental and physical health of the workers in mines, in fields, and in factories doing hard work over long hours, and for the troops in training who had strenuous activities and some exposure. Much of the caloric requirements for hard work had to come from bread. That there were people leading sedentary lives and requiring less bread who might do as well on low-extraction flour was not allowed to affect the issue.

Table IV on p. 101 of the M.R.C. report gives "urinary excretion of B-vitamins at various stages of the experiments." At one orphanage on the day of the commencement of the experiment with 70%-extraction bread the amount of aneurine excreted was on an average 0·40 mg.; by the end of the year it had fallen to 0·20 mg. Riboflavine started with an average of 0·50 mg. and fell to 0·11 mg. At the other orphanage the determinations of aneurine are not recorded beyond three and a half months, by which time the amount excreted had fallen from 0·30 mg. to 0·11 mg. These figures may be an indication that there was slow depletion of these vitamins taking place; it is not certain that had the experiments been continued for another two years the results would have been as favourable for 70%-extraction flour as for 85%-extraction.

Both in the report and in the *Lancet* article there are statements which show that the authors are not well acquainted with the views of other nutritionists. On p. 51 of the report there appears: "As a result the idea has grown that milk is essential for good nutrition, and that only a diet which cannot be made to promote better growth by supplementing it with milk can be considered fully adequate." It was long after man had reached his full physical development in the stone ages before milk entered his diets and then only among pastoral tribes. There have been many races of strong vigorous people who have never had milk except at their mothers' breasts. The gigantic Queen of Tonga was a striking figure at the Queen's Coronation. Her magnificently developed Polynesian ancestors had never had milk after infancy.

There appears on p. 232 of my book on *Tropical Nutrition* (3rd edition, 1951): "No particular foodstuff of any kind is essential because all the nutrients needed by man are found both in animal and vegetable foodstuffs." That has been almost an axiom among nutritionists for many years past.

Milk is undoubtedly good for children, but it is not essential. Fruit is good for us all, but there is nothing in fruit that is not also present in vegetables.

In their article (p. 210) the authors state: "The experiments themselves show clearly how important it is not to generalise too widely from any experiment carried out within limiting conditions." There can be no disagreement with that if it means that children well looked after in institutions can thrive as well on white bread as on an equal amount of brown bread in certain diets taken over a period of a year or eighteen months. There can be no deduction from the experiments that they would continue to thrive indefinitely; nor can it mean that hard-working labourers would do as well on bread of 70%-extraction flour as on bread of 85%-extraction flour where a large proportion of the calories for work must come from bread.

Again on p. 210 they state: "It is of course always quite possible that little attention will be paid to these experiments of ours until we are all dead and buried. It would be difficult now, for instance, for any administrator to go back on the policy of enrichment." Surely that statement contains more than one unwarranted generalisation?

The authors had something to do with the war-time policy of enrichment. It was on their advocacy that chalk was added to the flour. There was not universal

agreement with this because it was thought that the amount of calcium needed in human nutrition had been exaggerated.

Apparently the authors now condemn the "policy of enrichment." Possibly in respect of the use of synthetic vitamins the pendulum has over-swung in one direction, which is no reason why it should swing too far in the other direction. Some of us will continue to hold the view that in many parts of the world reinforcement may be the best and cheapest way under certain circumstances and conditions of making the diets of the poorest classes nutritionally adequate.

Bantry, co. Cork, Eire. LUCIUS NICHOLLS.

SIR,—In his lecture Professor McCance is most persuasive about the nutritional value of bread of low extraction-rate. One wonders, however, if he is justified entirely in deducing from the results of an experiment with children, lasting only eighteen months and concerned mainly with growth, that one form of bread is as good as another. If the experiment had continued for the lifetime of these children and had included observations made on their children, then an improvement or deterioration in general health might have been noticed.

As you stated in your leading article, the advantage of a change to a low extraction-rate has not yet been proved. Growth is not the only yardstick by which we must measure health.

North Berwick. J. C. G. MERCER.

PSYCHIATRIC EVIDENCE IN COURT

SIR,—I was recently asked to examine a young woman to ascertain whether an appeal could reasonably be made on psychiatric grounds in mitigation of a series of cheque frauds to which she had pleaded guilty and for which she had been sentenced to six months' imprisonment.

I found her past history rich in significant psychiatric criteria. She was the only child of parents who separated when she was three years old. Her father was said to have died in a mental hospital and her mother was described as unstable, immoral, cruel, and unscrupulous. According to the patient she was abused, tyrannised, and humiliated. She was repeatedly threatened with "suffocation" during her mother's tantrums and told how ugly and hated she was. In later years she asserted she was consistently robbed by her avaricious and parasitic parent, or alternatively, if no cash was forthcoming, her personal belongings were pawned. She had a nervous breakdown while at school.

She developed marked feelings of inferiority and ideas of reference and persecution and was subject to severe bouts of depression, obsessional repetitive conduct, and auditory hallucinations. She was coerced into a loveless marriage with an American Serviceman by her mother and a divorce followed. Later on she married a man of colour, who at times treated her in cruel fashion.

With funds essentially derived from alimony she bought a boarding-house on mortgage but, having little experience in such matters, she got into serious financial difficulties. She was cheated out of money which was earmarked for household effects and furnishings. Her husband thereupon threatened to sue her mother for monies owing by her unless the goods required for their home were forthcoming.

It was while under this intolerable strain that she signed cheques with a false name to provide household linen, pots and pans, dishes, and the like. The offences occurred over a period of eight days. Fourteen cheques were used in all and the amount involved was £180. All the goods were recovered: some had not even been unwrapped and the receipts were found in her possession. She uttered four cheques in the same store in one afternoon and even returned to a shop two days after having passed a false cheque there.

The magistrate who passed sentence knew nothing of her psychiatric history, on which I decided I would give evidence on her behalf. At the appeal I stressed the essential points and suggested that the woman was a borderline case of mental illness who, in attempting to reorganise her life and establish some security, had only succeeded in getting herself more involved. I said that she required psychiatric treatment and careful supervision by some suitable older woman. There had been no previous offences and a woman friend spoke of her good character and integrity.

Her counsel suggested that had the magistrate known the true facts of her history he might well have awarded a less severe sentence or placed her on probation. He pleaded for leniency and a chance for the woman to repair her broken life. She had suffered enough and had already paid dearly for her dishonesty. Prison could only further distort her already twisted mind.

The appeal was dismissed in a matter of a few minutes. The unfortunate woman was admitted to Holloway Prison on the eve of Ruth Ellis's execution.

The day after my unsuccessful appearance in court in this case, the following newspaper report appeared under the heading "The 'human magpie' admitted he robbed railway 22 years":

"A 60-year-old man, who robbed the railways for 22 years, was described at Reading today as 'a human magpie.' In a shed at the bottom of his garden were found 1200 articles, weighing 3 tons 13 cwt. and worth about £515, which he admitted stealing.

The man . . . worked as a chargeman blacksmith on the railway for many years. He was put on probation for a year."

How can justice be permitted to operate so inequitably? Was the railwayman lucky and was this woman's punishment deserved; or was her sentence unjust? Why were the psychiatric features ignored?

Could not cases on whose behalf psychiatric evidence is called be remanded for a medical report in order to check that evidence? Until such time as adequate psychiatric treatment can be provided for offenders with neurotic disabilities, they should not be sent to prison before their cases have received the most careful medical consideration. Prison is meant to punish and deter: not to mutilate and destroy.

London, W.1. ELLIS STUNGO.

TUBERCULOUS LESIONS AFTER CHEMOTHERAPY

SIR,—I am sure that most clinicians will agree with the conclusion drawn by Dr. Dick (July 30) that isoniazid is in fact the most valuable drug we have at present in the treatment of pulmonary tuberculosis and should be given in some combination in every case unless intolerance precludes its use. Moreover, it should be used, as with all antituberculous chemotherapy, for a long time. I would suggest, however, that the full therapeutic dose of isoniazid as given by Dr. Dick (200 mg. daily) is in fact not a full therapeutic dose. Isoniazid treatment should commence with at least 8 mg. per kg. body-weight per day, and it is only when given in this dosage that the full therapeutic effects become apparent.

Dr. Dick describes in his conclusions three possible stages of open cavity walls. After full dosage of isoniazid many more of the lesions with the completely healed walls which he describes will be seen. The difficulty, of course, is that it is impossible to tell prior to surgery which cases will fall into this category. I have been amazed also at the amount of resolution which can occur when patients with what appears to be chronic long-standing disease are treated with isoniazid.

Dr. Dick says "it would be interesting to know whether the [tuberculin] reaction is ever reversed after isoniazid treatment of primary lesions." There is a recent interesting article by Robinson et al.[1] on this subject which, while not being final yet, does point out the possibility of reversing the tuberculin reaction to negative with isoniazid therapy.

North Carolina Sanatorium, McCain, North Carolina. CYRIL EVANS Staff Physician.

1. Robinson, A., Meyer, M., Middlebrook, G. *New Engl. J. Med.* 1955, 252, 983.

ORAL IRON COMPOUNDS

SIR,—I have read with interest last week's article by Dr. O'Sullivan and his colleagues. I must congratulate them on a careful presentation of very interesting figures. I would, however, in view of their references to my work, and as I was the first to introduce ferrous succinate into therapeutics, make the following remarks:

Cases refractory to oral iron.—Has the phosphate metabolism been investigated in these cases? It is theoretically possible for an excess of phosphate in the alimentary tract completely to vitiate all iron absorption. Has this condition been excluded, assuming that it does exist? If it has not been excluded, has any attempt been made to protect the iron administered from interaction with phosphates in order to improve the uptake of iron? I need not emphasise that iron phosphates are insoluble and ferric phosphate is completely insoluble.

Inclusion of ascorbic acid.—This is incorrectly termed a "supplement." It is found that the inclusion of ascorbic acid tends to protect ferrous salts from oxidation. This may account for the better uptake of iron preparations administered coincidentally with ascorbic acid. We are here, therefore, not concerned with vitamin-C deficiency.

The criticism that ferrous sulphate was given for 42 days, compared with ferrous succinate for 24 days.—I would make the point that many of us are dealing with *patients requiring treatment*. If one has embarked on a particular line of treatment, one is loth to discontinue therapy in the absence of intolerance. Some of these cases were obviously improving slowly on ferrous sulphate, which was continued until clinical improvement justified its discontinuance. Had ferrous succinate been employed, shorter treatment would have been required.

Tolerance.—The salient feature here is not whether diarrhœa or constipation of "sufficient severity" was present. The criterion should be, is it present at all? Acceptable forms of therapy should produce no, or minimal, side-effects. The patient's well-being must be considered primarily. Home-treated cases will only persevere with a form of treatment which does not upset them. This is the crux of the matter.

I should welcome any observations on these matters.

London, W.1. DAVID HALER.

PYRETOGENIC EFFECT OF LYSERGIC ACID DIETHYLAMIDE

SIR,—Lysergic acid diethylamide (L.S.D.) has been found by Horita and Dille [1] to possess a pyretogenic effect in rabbits, cats, and dogs when injected intravenously in amounts as small as 0·5 μg. per kg. body-weight. This action was prevented by transection of the cervical spinal cord or administration of *d*-tubocurarine or sodium pentobarbitone. Administration of antipyrin, 'Dibenamine,' 'Hydergine,' or dihydroergotamine did not influence the pyretogenic effect, which Horita and Dille concluded was of central origin.

L.S.D. is a very potent and specific antiserotonin,[2] but this action does not manifest itself on the central nervous system.[3] If the pyretogenic effect of L.S.D. is of central origin we should not expect it to be inhibited by serotonin.

We have used 16 rabbits, weighing 2·5–3 kg., divided in two groups. All were given 20 μg. per kg. of L.S.D. intravenously. Group B were given simultaneously 5 mg. per kg. of serotonin creatinine sulphate intravenously. The rectal temperature was measured by a mercury thermometer. The results are summarised in the accompanying table. In both groups there is a significant increase in the temperature after the injection of L.S.D. The pyrexia does not differ significantly between the two groups, thus showing that in these conditions the serotonin does not inhibit the pyretogenic action of L.S.D.

This supports the opinion that the pyretogenic effect of L.S.D. is of central origin.

L.S.D. was kindly supplied by Messrs. Sandoz Ltd., Basle, and serotonin by Abbott Laboratories, Chicago.

Department of Pharmacology, Medical Faculty, University of Zagreb, Yugoslavia. Z. SUPEK, S. MILKOVIĆ.

1. Horita, A., Dille, J. M. *J. Pharmacol.* 1955, **113**, A29.
2. Gaddum, J. H., Hameed, K. A. *Brit. J. Pharmacol.* 1954, **9**, 240.
3. Woolley, D. W., Shaw, E. *Brit. med. J.* 1954, ii, 122.

INFLUENCE OF SEROTONIN ON THE L.S.D-INDUCED PYREXIA IN RABBITS

Group	No. of animals	Temp. (deg. Centigrade) before injection	Temp. (deg. Centigrade) after injection				
			1 hr.	2 hr.	3 hr.	5 hr.	24 hr.
A (L.S.D.)	8	39·59 ± 0·08	41·37 ± 0·12	41·20 ± 0·06	40·41 ± 0·11	40·15 ± 0·16	39·57 ± 0·14
B (L.S.D. + serotonin) ..	8	39·66 ± 0·08	41·24 ± 0·14	41·44 ± 0·10	40·81 ± 0·16	40·49 ± 0·18	39·41 ± 0·08

CLINICAL TESTS OF PASSIVE JOINT SENSE

SIR,—I agree with Sir Charles Symonds and Dr. Gooddy (July 16) that testing the sense of position and motion in the usual way is an indispensable and fairly reliable part of the neurological examination, although there are some differences in performing the test. Although we have to consider the possibility that the patient may be able to judge movement from some distortion of the skin, as Dr. Lee and Mr. Browne (July 9) point out, I feel that grasping the toe laterally with as little pressure as possible is preferable to gripping the dorsal and plantar surfaces, because of the greater variations in pressure by using the latter method. Many patients will attempt to move their toe up and down in order to judge the position of the toe, and they should be instructed to avoid these movements. I was struck, however, by the fact that Lee and Browne as well as your correspondents consider only the great toe and do not mention the small toes. Yet it is well known that the sense of position, then that of motion, is lost in the small toes before it disappears in the great toe. Therefore testing deep sensation only in the great toe and omitting the small toes would appear incomplete and would decrease the value of the test in a case where the sensation has been found normal in the great toe.

Hospital for Mental Diseases, Brandon, Manitoba, Canada. MILO TYNDEL.

ADENOSINE AND THE HEART

SIR,—As I understand from Dr. Somló's letter of May 28, the effects of adenosine triphosphate in this case are attributed to the production of a state of shock similar to that produced by histamine, adrenaline, or insulin.

May I suggest another explanation—namely, that A.T.P. speeds up the polymerisation of actin, which, in the whole muscle, means the relaxation of the muscle. Your annotation in the same issue states that Mg phosphate is the most active member of the group, and this supports my view, since the presence of Mg is absolutely vital to the polymerisation of actin (in other words, to the relaxation of muscle). Hence, A.T.P. without Mg does not bring about polymerisation, while additional traces of minimum amounts of Mg—combined with A.T.P.—increase the polymerisation (and thus relaxation) enormously.

I was very interested in the ideas expressed in Dr. Somló's letter and your annotation, and in the light of them I would suggest that the effect of A.T.P. in paroxysmal tachycardia may be produced in both ways by the induction of shock and actin polymerisation.

Scientific Services Division, Snowy Mountains Hydro-electric Authority, Cooma, New South Wales. S. ZADOR.

SPECIMENS IN THE POST

SIR,—We have been asked by the mails branch of the Edinburgh G.P.O. to draw the attention of practitioners to the regulations governing the sending of pathological specimens through the post. The following paragraphs relevant to the transmission of deleterious liquids or substances by letter post have been abstracted from the Post Office Guide:

(1) Any such liquid or substance must be enclosed in a receptacle, hermetically sealed or otherwise securely closed, and this receptacle must itself be placed in a strong wooden, leather or metal case in such a way that it cannot shift about, and with a sufficient quantity of some absorbent material (such as sawdust or cotton-wool) so packed about the receptacle as absolutely to prevent any possible leakage from the package in the event of damage to the receptacle. The packet so made up must be conspicuously marked "Fragile with care" and bear the words "Pathological specimen."

(2) Any packet of the kind found in the parcel post, or found in the letter post not packed and marked as directed, will be at once stopped and destroyed with all its wrappings and enclosures. Further, any person who sends by post a deleterious liquid or substance for medical examination or analysis otherwise than as provided by these regulations is liable to prosecution.

Although in response to a previous appeal the number of breakages has been reduced over the past two years, specimens are breaking in transit at the rate of twenty per month. The complaint is that such breakages, occurring as they do amongst the letter post, contaminate and make unpleasant the handling of the mail.

It is not suggested that breakages are wholly the fault of the sender. There are, however, a number of unduly optimistic members of the medical profession who consider that a single wrapping of paper constitutes adequate packing. The destruction of wrappings and enclosures (para. 2) means that in the majority of cases the laboratory is unaware that a specimen has been sent and the sender is left waiting for a report on a specimen which he believes is held by the laboratory.

Pregnancy Diagnosis Laboratory,
Usher Institute,
Warrender Park Road, Edinburgh, 9. B. M. HOBSON.

FELLOWSHIP OF THE ROYAL COLLEGE OF PHYSICIANS

SIR,—On p. 443 of your Educational Number (Aug. 27) the higher diplomas of the Royal College of Physicians are mentioned; and it is stated that "Fellows are elected annually at a general meeting of the college." This is, unfortunately, not the case. The procedure is that any fellow may propose the name of a member for election to the fellowship; then, after deletion of some of the names by a committee, the other names are voted on by the body of fellows. There are no general meetings of the college: only the fellows are entrusted with the task of adding to their number—and even they can only select from the names that have passed through the meshes of the president's net. It is not unfair to regard the College of Physicians as a very limited democracy.

London, W.1. A. PINEY.

A BARBITURATE ANTAGONIST

SIR,—Dr. Leurer (Aug. 13) quotes the results of a case of barbiturate (type unstated) poisoning in which there was a blood-level of 58 mg. per 100 ml. some 5 days after ingestion. He then says: "These figures confirm the estimate of Dr. Wright,[1] as opposed to Professor Shaw's view[2] that on the 6th day only little barbiturate is left in the body."

Let us assume that the barbiturate was phenobarbitone, the most common stable barbiturate derivative. A blood-level of 58 mg. per 100 ml. means that there was about 24 grammes (384 grains) in the body, as barbiturates are distributed evenly throughout the body-water. Next apply Dr. Wright's rate of disappearance, 15% per day, to this amount. We find that this person must have taken over 600 grains of phenobarbitone. As our highest recorded dose has been 100 grains I am not surprised that barbiturate was present 5 days after ingestion. I do wonder perhaps whether such a dose was taken or whether one should regard the analysis with suspicion.

Department of Pharmacology,
University of Melbourne. F. H. SHAW.

1. Wright, J. T. *Lancet*, 1955, i, 1073.
2. Shaw, F. H. *Ibid*, p. 969.

THE UTER AND THE UTERUS

SIR,—I favour an alternative explanation to that given by Mr. Burnett (Aug. 6) concerning the derivation of "uterus."

The word uterus belongs to the sphere of Indo-German languages, and its root is related to the old Indian word *udaram* (abdomen). It is not in the nature of men to call so holy and mysterious an organ after such a profane object as a bag made of goat skin.

The German word is *Gebärmutter* (*gebären* is related to the English bear). The Slav is *maternica*.

Ἀδελφός = ἀ + δελφός from δελφύς (uterus); and ἀδελφός is the one which comes from the same (ἀμα = ἀ-) uterus, and not the other way round. This explanation seems to be more logical following the etymology.

Zagreb. V. DIAMANT.

TONSILLECTOMY WITHOUT TEARS

SIR,—During the past five years it has been my lot to anæsthetise upwards of 1000 children for tonsillectomy by dissection. It was therefore with much interest that I read Dr. Gusterson's paper.[1]

Like Dr. Gusterson, I have tried a variety of premedications. The popular barbiturates by mouth I find very unsatisfactory. Their effect is uncertain, and too often they are vomited by the child before arrival in the theatre. Whether the child arrives in theatre asleep or not, it is liable to be confused and uncoöperative and may struggle during induction. Crying at this stage is liable to increase bleeding during the operation. Even when amnesia is complete, this is outweighed by the other drawbacks. When it is not, memories seem to have a nightmarish quality. Postoperatively the children tend to be restless and cry, so that additional sedation with an opiate is required.

Until recently my cases have normally been premedicated by an injection of pethidine and scopolamine. This has proved reasonably satisfactory. The great majority arrive in the theatre tranquil and will permit a careful venepuncture with little protest. Vomiting or retching is occasionally produced, and a few children become flushed. Postoperatively the children are calmer and quieter than with barbiturates.

I routinely induce anæsthesia in these cases with a mixture of thiopentone and gallamine ('Flaxedil') followed by endotracheal nitrous oxide and oxygen. An armoured tube is used under the tongue-plate.

I have long felt that it would be an advantage if premedication could be given entirely by mouth. I am sure that where a child is unduly apprehensive of venepuncture, this is partly due to a painful experience of premedication—and let us face it, the pain of an injection varies between quite wide limits, as many adult patients can testify!

I had considered using methylpentynol ('Oblivon'), but reports were on the whole unfavourable, and it seemed that atropine by injection would still be required. I was therefore particularly grateful to Dr. Gusterson for his suggestion that oblivon and hyoscine given by mouth

1. Gusterson, F. R. *Lancet*, 1955, i, 940.

should be used. Immediately following the appearance of his paper I got the hospital pharmacist to prepare a supply of oblivon elixir to which hyoscine hydrobromide gr. $^1/_{100}$ was added to each 5 drachms. As a trial a number of tonsillectomy cases were given 1 drachm per stone of body-weight 1 hour before operation, up to about 6 drachms. The method was soon extended to all child tonsillectomy cases, and the results so far are most encouraging. The original dose is still used. In the ward the children take the elixir without protest, and the nursing staff are very much in favour of the method. The children usually sleep, but may not. They are awake, but calm and coöperative in the theatre. Vomiting has been conspicuously absent, probably owing to the hyoscine. Venepuncture is easily done with little or no protest and a quiet induction follows. There has been no untoward effect on anæsthesia, and respiration seems less depressed than before. Return of pharyngeal reflexes after operation is not delayed. Postoperatively the children do not vomit and are usually quiet. Few have required any postoperative sedation.

I personally began this trial with doubts, for methylpentynol had not impressed me, and as a result of a previous trial in the same unit there was some prejudice among the nursing staff. The addition of hyoscine, however, besides giving satisfactory drying of secretions, has resulted in very satisfactory sedation.

Timperley, Cheshire. FRANK L. ROBERTSHAW.

GRAVES'S DISEASE

SIR,—In your columns last November Dr. Menof [1] described transient, reversible enlargement of the thyroid in response to intravenous injections of noradrenaline and also during the paroxysmal hypertensive episodes associated with phæochromocytoma. Of great interest in this connection is the original description by Graves [2] of three cases of the disease known in this country by his name. His description is so atypical of the disease as we know it that it raises some doubt whether any of his three cases was in fact "Graves's disease." He wrote:

"I have lately seen three cases of violent and long-continued palpitations in females, in each of which the same peculiarity presented itself, viz. enlargement of the thyroid gland; the size of the gland was subject to remarkable variations in every one of these patients. When the palpitations were violent the gland used notably to swell and become distended, having all the appearances of being increased in size in consequence of an interstitial and sudden effusion into its substance. The swelling immediately began to subside as the violence of the paroxysm of palpitation decreased, and during the intervals the size of the gland remained stationary. . . . In one patient the beating of the heart could be heard during the paroxysm at some distance from the bed. . . The sudden manner in which the thyroid in the above three females used to increase and again diminish in size, and the connection of this with the state of the heart's action are circumstances which may be considered as indicating that the thyroid is slightly analogous in standing to the tissues properly called erectile."

He made it clear that he did not consider the primary lesion to be in the thyroid by concluding:

"It is obvious that if palpitations depending on functional disease of the heart are capable of exciting this swollen state of the thyroid, we may expect to observe the tumefaction of the gland also where the palpitations depend on organic disease of the heart."

He then proceeded to retail a case described to him by a friend, which seems typical of that condition which we know today as Graves's disease. Exophthalmos, which is not mentioned in Graves's cases, was present in this patient. He ascribed the clinical manifestations here, however, to primary organic heart-disease.

We have not found in any other description of the disease anything resembling Graves's account of these rapid fluctuations in the size of the thyroid. It does, however, bear a very close resemblance to the following description by Bauer and Belt [3] of a case of phæochromocytoma:

"The patient . . . felt a swelling in her neck anteriorly; her heart began to pound, she shook and experienced extreme weakness and fatigue; her skin became very pale, then red, her lips and finger-nails became blue; . . . her thyroid was markedly enlarged, its contours being clearly visible. The whole gland was bulging. . . . The attack lasted twenty minutes. The swelling of the thyroid disappeared completely in a few hours."

It is interesting to speculate whether Graves, in his own three cases, was describing the clinical picture of phæochromocytoma for the first time rather than that disturbance of thyroid function which now bears his name.

Nuffield Department of Clinical Medicine, Radcliffe Infirmary, Oxford. K. B. TAYLOR J. H. B. WILLIAMS.

SUBPERIOSTEAL OR INTRA-OSSEOUS LIPOMA OF THE CLAVICLE

SIR,—Cowdell [4] states that intra-osseous lipomata with expansion of the cortical outline of the affected bone are extremely rare. He could only find two case-reports in which the medullary origin of the lesion appears certain. He reported a further case of intra-osseous lipoma of the posterior end of the left first rib. Dickson and others [5] state that intra-osseous lipomata of flat bones, particularly vertebræ, are not infrequent, although in long bones they are rare.

Accordingly I should like to report a case of lipoma of the left clavicle.

The patient, a man aged 65, was admitted to the medical wards on April 11, 1948, with emphysema, chronic bronchitis, and myocardial degeneration. As an incidental finding there was a painless, spherical swelling, about $1^1/_2$ in. in diameter, of firm elastic consistency, arising from the antero-inferior surface of the right clavicle in the region of the middle third. Apparently the patient had been aware of its presence for the past ten years, during which time it had gradually been increasing in size.

The tumour was removed under local anæsthesia, through a transverse incision over the middle third of the clavicle. The tumour was found to arise by a narrow pedicle composed mainly of fibrous tissue with a very little cancellous bone. Subsequent section showed: "Simple lipoma surrounding a fragment of cancellar bone, containing actual marrow from the region of the clavicle."

Hackney Hospital, London, E.9. R. F. READ.

MITRAL INCOMPETENCE IN EXPERIMENTAL AURICULAR FIBRILLATION

SIR,—The work of Dr. Daley and his colleagues (July 2) makes a notable contribution to our understanding of left auricular pressure curves. I fully agree with their remark that the interpretation of these curves is often difficult.[6] I have felt jets of regurgitation through "normal" mitral valves both in laboratory animals and in human subjects with auricular fibrillation, and, incidentally, also in laboratory animals with sinus rhythm.[7] (This latter phenomenon was distinguishable from the former in that aortic compression did not heighten the C–V waves in the tracing, the A wave remained predomi-

1. Menof, P. *Lancet*, 1954, ii, 996.
2. Graves, R. J. *Lond. med. surg. J.* 1835, **7**, 516.
3. Bauer, J., Belt, E. *J. clin. Endocrin.* 1947, **7**, 30.
4. Cowdell, R. H. *Brit. J. Surg.* 1954, **41**, 664.
5. Dickson, A. B., Ayres, W. W., Mason, M. W., Miller, W. R. *J. Bone Jt. Surg.* 1951, **33A**, 257.
6. Wilson, V. H., Vetten, K. B., Crawshaw, G. R., Knocker, P. *S. Afr. J. med. Sci.* 1954, **19**, 1.
7. Crawshaw, G. R., Wilson, V. H., Kreel, L., Vetten, K. B., Borman, J. *Brit. J. Surg.* 1954, **42**, 319.

nant and C and V separate). Evidence of regurgitation and its degree depends on the sensitivity of the surgeon's finger and is, I believe, reliable; but objections have been raised on the grounds that pericardiotomy and cardiotomy invalidate the test. The use of Evans blue by Daley and his colleagues is a welcome and neat qualitative technique.

To return to the main theme of the association of mitral incompetence and auricular fibrillation in patients with no "organic" incompetence of the valve, it is interesting to speculate on a somewhat similar phenomenon which may occur at operation on patients who have pure mitral stenosis with auricular fibrillation. Mitral regurgitation is more easily produced by valvotomy in fibrillators than in patients with sinus rhythm. The less favourable outlook in the long-term follow-up of patients after successful valvotomy who were fibrillating at the time of operation or who fibrillated afterwards, compared with those who maintain sinus rhythm, may be in part due to the development of mitral incompetence. It may be unwise to complete mitral valvotomy in fibrillators for this reason. I become loth to continue cutting a fused commissure as soon as I feel the slightest jet of regurgitation.

Johannesburg General Hospital. G. R. CRAWSHAW.

THE PROBLEM OF MULTIPLE SCLEROSIS

SIR,—Discussing the tendency for early symptoms of multiple sclerosis to spread according to contiguity of structure, Dr. McAlpine, in his article in your issue of May 21, quoted Williamson's observation on the similarity between the pattern produced by the application of a soluble dye to the cut surface of the spinal cord, and the mode of development of plaques (1903). He also quotes the occurrence of a ring formation in the early plaques of multiple sclerosis, described by Hallervorden and Spatz in 1933. These authors attributed this type of formation to diffusion outwards from a central focus as in the so-called Liesegang phenomenon.

Since Dr. McAlpine stressed the viewpoint that the allergic theory is the most acceptable to the clinician in the ætiology of multiple sclerosis and an infection might be responsible for sensitisation in the allergic process, I would like to draw attention to Hallervorden's theory as seen by the neuropathologist.[1] Proceeding from the Liesegang phenomenon, Hallervorden compares the plaques in multiple sclerosis, especially in the concentric form, with the ring spot diseases of plants. He considers the pathological findings consistent with a virus ætiology, ascribing the formation of focal lesions to the simple or rhythmic diffusion of a steadily multiplying infective agent. In the plant diseases mentioned above, a virus has been identified. Adopting the clinician's thinking, as expounded by Dr. McAlpine, and Hallervorden's findings as a base for further research could prove very helpful in understanding of the ætiology of multiple sclerosis.

Hospital for Mental Diseases, Brandon, Manitoba, Canada. MILO TYNDEL.

MORPHINE ANTAGONISTS

SIR,—In view of the reports that have recently appeared concerning the antagonistic actions of 2,4, diamino-5-phenyl thiazole and ββ-methyl-ethyl glutaramide ('NP13') to the depressant actions of morphine, related narcotics, and the barbiturates, we describe here our experiences with these compounds.

We have been studying the action of antagonists to central-nervous-system depressants, by measuring the ability of an antagonist to restore to normal the depressed respiratory volume in the rat. The doses of the depressant have been adjusted to give a 50% depression in respiratory minute-volume, after which the antagonist under consideration is administered intravenously, intraperitoneally, or intramuscularly.

The thiazole and glutaramide have been tested separately and in combination against the respiratory depression produced by quinalbarbitone ('Seconal') and pentobarbitone. A larger series of studies were carried out examining the activity of the thiazole against morphine-induced depression (in a few instances methylmorphinan was the depressant used). In all of these studies it was noted that the compounds were ineffective in stimulating the depressed respiration unless they also produced a heightened reflex activity which very frequently passed into frank convulsions, or convulsions occurred with the first sign of respiratory stimulation. It has been our conclusion that in the rat these materials exerted their stimulatory effects by virtue of their central convulsant action.

We have not examined the effect of these two substances upon humans depressed by morphine-like materials or by barbiturates, but Shulman et al.[1] reported that some of their patients poisoned with barbiturates and treated with thiazole and glutaramide exhibited excitement and restlessness to a degree requiring medication with a barbiturate. In another paper,[2] it is pointed out that high doses of the thiazole given to patients caused restlessness, muscular twitching, a gasping type of respiration, and even vomiting. All of these observations suggest that in man, as in the rat, the antagonistic actions of these substances against central depressants are the resultant of convulsive properties similar to those of central-nervous-system stimulants, such as picrotoxin, rather than a specific antagonism as with morphine and nalorphine.

It is not our intention to suggest that these compounds should not be employed but rather to point out the possibility that in man they are potential convulsants, and that therefore those who are using them should be on the lookout for signs indicating this activity. The value of these agents in the treatment of overdosage of barbiturates and of morphine-like drugs will become apparent only when a sufficiently large group of patients have been treated with them, and when these results are compared with the excellent results obtained from conservative methods of therapy, with which mortality-rates as low as 1·6 and 2%[3,4] have been reported in a larger series of patients than those reported by Shulman et al. The mortality-rate reported by these workers was not any lower than that obtained with the best forms of conservative therapy.

Samples of the two antagonists were very kindly given to us by Dr. Shaw, and recently a larger sample of the thiazole ('Dapazole') was supplied by Dr. Victor A. Drill, of G. D. Searle & Company.

Department of Pharmacology, Yale University School of Medicine, New Haven, Conn., U.S.A. DESMOND D. BONNYCASTLE
P. J. COSTA.

IRRADIATION NEPHRITIS

SIR,—Dr. Smith and Dr. Williams (July 23), in reporting one case of irradiation nephritis, suggest that radiotherapists are still insufficiently aware of this complication of treatment.

It should be emphasised that X-ray therapy to the abdomen makes a major contribution to the chances of survival of patients with certain radiosensitive tumours. Thus Boden and Gibb[5] reported that with prophylactic abdominal irradiation the 5-year survival-rate for early cases of seminoma testis could be raised to 80%.

Kunkler, Farr, and Luxton,[6] in their study of radiation nephritis, advised that renal function and location should be determined before X-ray treatment of the abdomen was undertaken. I think that radiotherapists in this

1. *Nervenarzt*, 1952, **23**, 1.

1. Shulman, A., Shaw, F. H., Cass, N. M., Whyte, H. M. *Brit. med. J.* 1955, i, 1238.
2. Shaw, F. H., Shulman, A. *Ibid*, p. 1367.
3. Clemmesen, C. *Acta med. scand.* 1954, **148**, 83.
4. Nilsson, E. *Ibid*, 1951, **139**, suppl. 253.
5. Boden, G., Gibb, R. *Lancet*, 1951, ii, 1195.
6. Kunkler, P. B., Farr, R. F., Luxton, R. W. *Brit. J. Radiol*, 1952, **25**, 190.

country are well aware of this complication and of the limits of renal tolerance to X rays.

In the case of the nephroblastoma reported by Dr. Smith and Dr. Williams it is clear that some risk of renal damage had to be accepted if the child was to have any chance of survival. Nevertheless, it would have been more informative if the dose distribution in the region of the remaining kidney had been estimated.

In conclusion I would like to draw attention to the recent work of Mendelsohn and Caceres [7] on experimental radiation nephritis in dogs, from which it appears that the biological dose level required to produce "nephritis" is remarkably similar in men and dogs.

Birmingham, 15. P. B. KUNKLER.

THE DEATH PENALTY

SIR,—Is Dr. Whitty right? The primary objects of the death penalty are (1) to punish the criminal, and (2) to prevent the culprit from repeating the offence. Whether capital punishment acts as a deterrent is secondary and open to discussion. Statistics do not seem to help. Common sense suggests that it might.

London, W.1. HAROLD KISCH.

COLLECTION OF URINE SAMPLES

SIR,—The collection of urine samples from infants, mental defectives, and uncoöperative children sometimes presents considerable difficulties and makes the rapid sampling of a large hospital population administratively difficult. We have developed a very simple technique which has been used with considerable success both at this hospital and at the Sick Children's Hospital in Toronto.

It consists in placing on the diaper a folded sheet of 'Kleenex' or other cellulose tissue so that it will be held near the urinary meatus. When the child's napkin is next changed, the kleenex is sent to the laboratory in a jar and the presence of phenylpyruvic acid may be detected by simply placing a few drops of ferric chloride solution (freshly prepared 5%) directly on the kleenex. In a positive case, a greenish ring will form and spread along the surface of the tissue. Further routine investigation may be carried out by placing the wet tissue in a 20-ml. syringe and expressing the urine from it by squeezing the tissue with the syringe plunger.

We have not found that the paper gives any reaction for sugar, albumin, or blood when this method is used.

Ontario Hospital,
Smith Falls, Ontario,
Canada. L. A. KERWOOD.

IF I WERE A MINISTER OF HEALTH IN ASIA

SIR,—Mr. Keeny's article of July 2 not only gives useful advice to an Asian minister of health, but also rouses the interest of many young men like myself who go abroad to gain experience. I suggest that reprints of his article should be distributed to the health departments of all the countries concerned and also to the organisers of the United Nations agencies, the British Colombo Plan, the F.A.O., and other similar organisations.

Though money is important in executing the health schemes, a lot can be done with public support. This requires widespread propaganda. I can say with personal experience that in India villagers come forward with men and material once they understand the significance of a particular object. Many roads, schools, and public works are being built as a result of this public support. So far health matters and hospitals have not received the emphasis due to them.

Mr. Keeny rightly says that the men who get special training should be used for that purpose for which they are trained. A friend of mine, after a training in pathology, was sent to a remote hospital where he did only a little pathology, but had to do other things for which he had no special training. An ophthalmologist had to devote most of his time to being a general physician. Unfortunately in spite of a scarcity of doctors, no incentives are given to young doctors to go to villages, and their remuneration is too low.

Every region has its own particular problems. Doctors should be encouraged to put forward new ideas. Good work should be rewarded. Frequent conferences should be held. Promotions should be according to merit rather than the length of service.

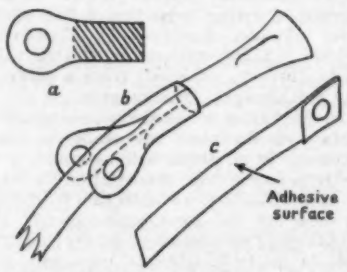
Lastly, all departments concerned should promptly deal with their correspondence. I know of a doctor who recently applied for four appointments; in one case there was a delay of three months, and from the others there has so far been no acknowledgment.

Withington Hospital,
Manchester, 20. HARI VAISHNAVA.

A MODIFIED TIEMANN'S CATHETER FOR BLADDER DRAINAGE

SIR,—A standard Tiemann's catheter is often more suitable for the treatment of urinary retention than a softer catheter, such as a Foley's, which is self-retaining, because of the greater facility with which it passes marked urethral obstruction. Unfortunately, frequent replacement and adjustment are often necessary to maintain it in position for prolonged continuous drainage, and this is a source of much discomfort for the patient.

Adhesive strapping around both penis and catheter, as a method of fixation, soon becomes moist and allows the catheter to slip out completely or sufficiently to cause obstruction. It also has the disadvantage that the end of the penis is obscured, thus masking signs of urethritis or balanitis that may be present. An alternative of a rubber catheter-retainer is not infallible in preventing slip, especially with the sudden jerks



that result from a patient's movements in bed. In addition, the band round the penis is narrow and of necessity tight. Another method sometimes used is that of putting a safety-pin through the catheter, and tying the dressing to it. This is a possible source of leakage, it can press against the skin, and may come undone particularly in the case of a semi-conscious patient who is not really aware of his actions.

The following modification, designed to overcome these difficulties, is easily and cheaply made, using an ordinary bicycle puncture outfit.

Two pieces of tyre patch are cut as shown at (*a*) in the accompanying figure. Then, exposing only the area shaded in the diagram, they are fixed to the catheter as at (*b*). They can be held in place until firm with a turn of adhesive tape, and the remaining area of stickiness neutralised with french chalk.

From $^1/_2$ in. adhesive tape two strips are cut (*c*), and they are fixed one on each side of the shaft of the penis, so that the perforated ends lie level with the glans. They are reinforced with a few turns of 1-in. adhesive tape round the shaft. The catheter is held to this dressing by two pieces of plain tape tied with a bow or other suitable knot, through the appropriate loops. The dressing need not be disturbed if the catheter has to be removed temporarily.

This catheter has proved satisfactory in use. It withstands sterilisation by boiling, and it causes the minimum of discomfort to the patient.

Paddington General Hospital,
London, W.9. ROBERT LAKIN.

7. Mendelsohn, M. L., Caceres, E. *Amer. J. Physiol.* 1953, **173**, 351.

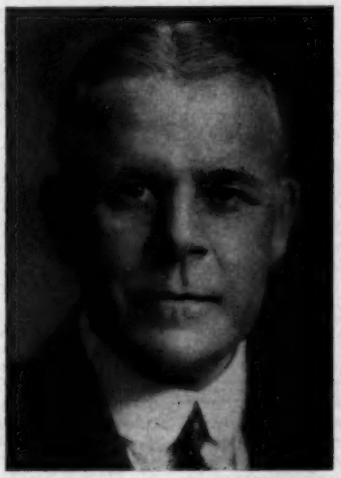
Obituary

ALBERT JAMES WALTON

K.C.V.O., M.S., B.Sc. Lond., F.R.C.S., F.A.C.S., F.G.A.

FOR over fifty years Sir James Walton has been part of the London Hospital. His friends and colleagues, whether they knew him as a brilliant student or as a senior surgeon of great and solid reputation, will all remember him for his many acts of personal kindness and professional service.

He was born in London in 1881, the son of Charles Frederick Walton, and he was educated at Framlingham College. But it was only after he began his medical studies at the London Hospital that he recognised his own abilities. For the first year or two he was content to be a Conjoint student; but as scholarship after scholarship was awarded to him he began to study in earnest, and while he was working for the Conjoint finals he went back to the school-room to take his London matriculation. He allowed nothing to interfere with his work and he played no games. But his outward appearance was deceptive and masked remarkable muscular strength. P. H. M.-B. relates how as a student at the London in the great cup days he saw Walton "pick up the captain of the victorious XV who had inadvertently trodden on his toes, throw him over his shoulders and sit on his head. No-one had any idea that this modest, bespectacled student who never openly indulged in any form of sport was capable of such an astonishing performance." His physical fitness, without benefit of games, continued. Nobody else perhaps has ever celebrated retirement from the active staff by executing a long-arm balance on his operating-table!



[Elliot & Fry

After qualifying in 1905, he held in turn most of the resident appointments at the London. His capacity for hard work was enormous, and while receiving-room officer—a job which then meant at least ten hours a day of strenuous work—he took, as a mere sideshow, the London B.SC. with honours. H. S., as a fellow registrar, saw the beginnings of Walton's surgical technique. "It was the result of infinite care and wide study. From the very start he kept full notes of every case he ever saw: to the very end he kept them in the most perfect order and they were the real basis of his work. He was not a man who cared to learn from others. He had to find out everything for himself, and he spared no effort to reach solid ground. I think it was in 1907 that my wife and I took him over to Belgium for the first holiday he had ever had. The fortnight cost us each £7, including the first-class fare from St. Katherine's Dock to Ostend—11*s.* 6*d.* return. He had never been on a steamer before, it was very rough, and I believe he actually enjoyed the inevitable result! It was a new experience."

After passing the higher surgical examinations "Isaak" held further junior appointments at the London Hospital, as well as a resident appointment at the Albert Dock Hospital under Sir Patrick Manson, before in 1913 he joined the staff of the London as assistant surgeon.

In the first world war, as a captain in the R.A.M.C., he was attached to the 2nd London General Hospital. Characteristically, he seized the opportunity to study at first hand cases of trauma to the nervous system. His counterpart in energy and zeal was George Riddoch, and together they made a major contribution to spinal-cord injuries, which Walton in 1919 chose as the subject of his Hunterian lecture at the Royal College of Surgeons.

After the war he served on the staff of the Poplar Hospital for Accidents, the Evelina Hospital for Children, the Seamen's Hospital, and the Victoria Hospital, Kingston. However, he soon recognised the value of concentrating his energies and time for the study of surgical problems at one hospital, and he gradually confined his hospital practice to the London, where he organised a follow-through department—at that time a new venture in hospital practice—to check the results of his operations. He was insistent that "the days when a surgeon only required to know how to operate are long since past, and now one of his most important functions is to decide when to operate." Thanks to his own careful records he was able to speak in surgical debates with particular authority. His opinion as a consultant was eagerly sought, and he made many original contributions to surgical literature, including his *Textbook of Surgical Dyspepsia* (1923), his oration to the Medical Society of London on carcinoma of the stomach (1936), and his Bradshaw lecture to the Royal College of Surgeons on gall-stones (1939). Gastro-enterology was his special field, but his interests were wide, and he partly wrote and partly edited his well-known *Textbook of Surgical Diagnosis* (1928). He also had considerable experience in the surgery of the thyroid gland and was associated with Dr. Donald Hunter and Prof. H. M. Turnbull in their work on parathyroid tumours.

In the '30s his theatre at the London Hospital was a natural meeting-place for visiting surgeons from abroad. Starting promptly on time, he would deal skilfully and speedily with a variety of cases, mostly in the upper abdomen. As an operator he was a superb craftsman with a mastery of technique that resolved the most baffling masses of adhesions and lesions. "Take no thought for the pathology till the anatomy is restored" was his guiding principle as the viscera disentangled themselves under the gentle strokes of his scalpel. "Qu'il est sûr de son couteau!" was one visitor's comment. Speed was essential in Walton's day, and his operations were astonishingly rapid, but only because he made no unnecessary movements. He never hurried and he used only simple instruments, especially the straight needle for which he was famous. It is not surprising that he had the largest experience at that time of the reparative surgery of the common bile-duct, for he was at his best in a desperate situation. "Make no haste in time of trouble," he would say, and his assistants would breathe a little more easily as he dissected in the hilum of the liver.

In turn he visited American and European clinics and he was a fellow of the American College of Surgeons and the Académie de Chirurgie de Paris as well as a chevalier of the Légion d'Honneur. At home his skill was recognised by his appointments as surgeon first to the Royal Household and then to King George V, Queen Mary, and King George VI, and later as extra surgeon to Queen Elizabeth. In 1935 he was appointed K.C.V.O. He also held office as president of the Association of Surgeons, of the Medical Society of London, and of the surgical section of the Royal Society of Medicine, and as vice-president of the Royal College of Surgeons of England.

In the second world war he joined the Home Guard as a private soldier, but he was soon attached to Southern Command as a consultant with the rank of brigadier. On his retirement in 1946 he took up the scientific investigation of the structure of semi-precious stones, the collection of which had for long been his hobby. He wrote papers on their crystalline structure, invented an apparatus for the rapid determination of their specific gravity, and was elected chairman of the Gemmological Association and president of the Association of Goldsmiths in recognition of his work. Of his continuing energy and vitality T. H. S. writes: "His erect and alert figure, almost springing down a corridor or street, could be recognised from afar. He never seemed to have an idle moment. His conversation ranged from surgery to trees, from precious stones to botanical drawings, and

any time spent in his company was both an entertainment and an education. There can have been few surgeons who have exuded enthusiasm and retained their youthfulness for so long."

"He acquired neither conceit nor pomposity" (writes H. L. T.), "and retained to the end a certain childlike simplicity. He had a generous disposition and throughout his professional career he never exhibited envy or jealousy of others."

H. T. likewise writes of Walton's personal outlook as one of kindliness and simplicity, and abhorrence of pretentiousness. "His dressers will remember first his unfailing courtesy to the nurses and his kindness to his juniors, then his shrewd clinical analyses, but especially his kindly word of explanation and encouragement to the patient before he moved on to the next bed. He delighted in his own physical fitness, making it a rule always to walk home after a ceremonial dinner, and spending his weekends in the open air tending the trees on his estate in Sussex which he loved. The stability and quality of the man astonished those about him as he calmly diagnosed the illness that would kill him, faced its implications, and endured its progress with a quiet philosophic acceptance of the end of a life of hard work and fulfilment." "His characteristics," in the words of an old friend, "were his great enthusiasm, his zeal for perfection, and his unending gentleness and kindness of heart. But above all there was his great courage."

He died on Aug. 27 at his home in Sussex. Mary Trevett, whom he married in 1909, died in 1953. Their son, who is a surgeon, a daughter, and his second wife, Renée Carrington, survive him.

ARTHUR RUPERT HALLAM

M.D. Edin., F.R.C.P.

Dr. Rupert Hallam died at his home in Somerset on Aug. 29, at the age of 77. He will have as his memorial the department of dermatology of the United Sheffield Hospitals, which was named after him in 1949 as a tribute to his thirty-three years' service as honorary dermatologist to the Sheffield Royal Infirmary.

His association with the Royal Infirmary dated from his childhood, for he was the eldest son of Dr. Arthur Hallam, a general practitioner in Sheffield who was honorary surgeon to the hospital. He was educated in Germany and at the Sheffield Grammar School, and received his medical training at Edinburgh, where he graduated in 1901. He then served as a ship's surgeon, and for several years held house-appointments at the Sheffield Royal Infirmary. His intention was to join his father in general practice; but he was introduced to dermatology by Dr. W. T. Cocking, who was then dermatologist to the Royal Infirmary, and he took over the care of the skin patients during Dr. Cocking's long absence through illness. He was proposing to study dermatology further on the Continent, but on Dr. Cocking's death he succeeded to the position of honorary dermatologist in 1911.

As the most junior member of the staff Hallam was allotted also the duty of supervising the radiological department, which was at that time in its infancy, and he continued to practise diagnostic radiology until 1925. This almost chance association with radiology was of the utmost value to him when superficial radiotherapy became one of the tools of the dermatologist, and a legacy of this association is that at Sheffield the superficial X-ray therapy of skin patients remains in the hands of the dermatologists.

During the first world war he served in the Royal Army Medical Corps, attaining the rank of major. After the war, he proceeded to build up his department of dermatology, and in the late 1920s he designed the present department incorporating many ideas which were years ahead of their time.

Well aware of the dangers of practising in isolation, he spent many of his holidays visiting clinics on the Continent and he attended the International Congresses of Dermatology in Budapest and Copenhagen. He was an original member of the British Association of Dermatology, of which he became president in 1936, and the esteem in which he was held by his colleagues was recognised when he was elected an honorary member of the British Association of Dermatology. He was also a founder member of the North of England Dermatological Society and its second president, and a regular contributor to the meetings of the dermatological section of the Royal Society of Medicine. He became M.R.C.P. in 1936 and was elected F.R.C.P. in 1940. He held that a dermatologist should be first and foremost a general physician.

Hallam was renowned for his punctuality, and his handsome and upright figure could be seen entering his outpatient department on the stroke of 2 o'clock. A reserved, fastidious, and rather awe-inspiring man, he aroused enthusiasm by his teaching, and no fewer than six of his assistants have been spurred on to become consultant dermatologists. He strongly believed that research should be devoted to common diseases, and he was best known for his contributions on papular urticaria, chilblains, and psoriasis. At a time when most men expect to ease off, he was faced with running his department throughout the second world war with inadequate assistance, and he took on the extra job of visiting dermatologist to the Derby Royal Infirmary. To add to his difficulties, the consulting-room which he had shared with several of his oldest friends for twenty-one years was destroyed by enemy action.

An artist of considerable merit, he exhibited at the Medical Art Society and, after his retirement, with the Falmouth Group of Artists. Even in his later years, his paintings displayed a freshness and vigour which belied his age. The self-portrait here reproduced is an example of his skill. Another pastime which he took up after retirement was sailing. He was proud of having learnt to handle a small sailing dinghy when over the age of 70, and he became an enthusiastic member of the St. Mawes Sailing Club.

"Hallam's shy and reserved manner," writes I. B. S., "perhaps prevented even wider recognition of his contribution to British dermatology; but those of us who had the privilege of working closely with him realise his greatness and count it a great honour to have been numbered amongst his friends."

J. C., looking back over more than forty years of friendship, says:

I first met him in 1912 and we became colleagues when he joined the staff of Fir Vale Hospital (now Sheffield City General Hospital) as radiologist in 1915. He was always interested in dermatology, and from the first he took charge of the wards for diseases of the skin in addition to his radiological work. He gave up radiology in 1925 but continued as dermatologist to the hospital until he retired ten years ago.

No-one could wish for a better colleague. He never spared himself where the welfare of the sick was concerned, and a request for help at any time was cheerfully met. As a man, he was quiet and reserved, but once you knew him he was a true friend. He loved walking in the country, and I look back with gratitude and pleasure to many pleasant rambles in Derbyshire and also in Switzerland where we spent a holiday together. Until this year he was able to indulge in his favourite hobby; but advancing years compelled him to restrict his travels to three or four miles. In his last letter to me he said he felt perfectly well and enjoyed life within his limitations.

Dr. ANDREW TOPPING

Sir Philip Manson-Bahr writes:

Although I had retired some years before the advent of Andrew Topping as dean of the London School of Hygiene and Tropical Medicine, yet I am impelled to record my impressions of him, not only as a man but also as the holder of this important office. Having served under seven deans

of the school since its early days, I would rate him high in this distinguished company. He did everything in his power to further the interests of public health, and in doing so he did full justice to the claims of tropical medicine, the world importance of which he freely acknowledged. During his many travels abroad, and especially to West Africa, he had himself witnessed many examples of the victories of tropical medicine in the field. It was generally felt that in his person there was a vital link which bound the staff of the school to fellow workers everywhere in the tropics. He entertained a great personal interest in all the students and workers in the school and was tireless in his efforts to promote good fellowship amongst them. It was this social instinct which led him to found the school Association which has had such success in uniting past students of all nationalities.

Andrew Topping, like his fellow Scot, Andrew Balfour, will long be remembered as a great human personality who sacrificed his health, and eventually his life, in his labours to promote the doctrines of public health and tropical medicine in Great Britain and throughout the Commonwealth and Empire.

For myself, I record with pride and gratitude the lead that Topping gave to the erection of a memorial at Old Meldrum, Aberdeenshire, the birthplace of Sir Patrick Manson, the father of tropical medicine and the founder of the London School of Tropical Medicine, in July, 1954.

A further tribute comes from Dr. H. Zborowski:

I would like to say on behalf of myself and my Polish friends from UNRRA's displaced-persons operation in Germany how much we regret the death of Dr. Andrew Topping. As director of the medical division of UNRRA's European regional office in London, he was well known to us as a man of noble character and outstanding qualifications for his important post. The health and relief services of the European D.-P. operations were built up in a rapid, energetic, and effective way under an experienced directorship—thanks to Dr. Topping and his co-workers in London and their knowledge of the problems involved. The results were evident in the prevention of communicable diseases, in health education, and in general hygiene in the displaced-persons' camps and the relief services. His handling of the difficult international medical personnel proved his excellent judgment.

LORD HORDER

MEMORIAL SERVICE

AT a memorial service held at St. Martin-in-the-Fields last Monday, Sir Henry Dale, O.M., gave an address in which he said of Lord Horder:

"Those who are able to be present here today, or who are personally represented in this assembly, from the highest in the land to the humblest of us, are but a proportion of a much greater number, in all walks of life and in widely scattered places, who remember with a grateful admiration, and with a warmth of personal affection, what he was able to do for so many by the use of his great and richly varied store of knowledge and experience, by the keen swiftness of his apprehension, and by the spontaneous warmth of his friendly interest and understanding, to give them enlightenment or reassurance, to speed the recovery of health, or to make easier what suffering still had to be borne."

The lesson was read by Dr. Geoffrey Bourne, and a passage from *Pilgrim's Progress* by Sir Malcolm Sargent.

A memorial service for the late Dr. Stanley Barnes will be held in the Cathedral Church of St. Philip, Birmingham, at noon on Wednesday, Sept. 14.

Appointments

BARRON, A. F. M., M.D. Edin., F.R.C.S.E.: consultant surgeon, Longmore Hospital, Edinburgh.

BRANSON, KATHARINE M. H., M.S. Lond., F.R.C.S.: consultant surgeon, Bruntsfield Hospital for Women and Children, Edinburgh.

CORFIELD, P. W. D., M.S. Lond., F.R.C.S.: part-time consultant surgeon, Mount Vernon Hospital, Northwood.

KELLY, R. E., M.D. Lond., M.R.C.P.: asst. physician (consultant), Maida Vale Hospital for Nervous Diseases, London.

KING, D. H., M.B. Lond., F.R.C.S.E.: senior casualty officer, South Shields district H.M.C.

MCCONNELL, R. B., M.B. Lpool, M.R.C.P.: consultant physician, Liverpool Stanley Hospital.

Notes and News

COLLEGE OF PHYSICIANS AND SURGEONS OF SOUTH AFRICA

THE constitution of the new College of Physicians and Surgeons of South Africa has now been decided.[1] In October, 1950, the federal council of the Medical Association of South Africa adopted a recommendation calling for the formation of such a college; and the council later appointed for this purpose a subcommittee, which prepared a draft constitution. Meanwhile the idea of a South African college had been placed before all doctors in South Africa, and those interested were invited to become founders. A meeting of founders was held in May, 1954, and the federal council, holding that thenceforth the college should manage its own affairs, had previously discharged its subcommittee. A steering committee set up at the meeting of founders has modified the draft constitution in accordance with decisions at that meeting. The steering committee will guide the affairs of the college for the first year of its existence. Time has been allowed for the enrolment of associate founders, and in due course an election will be held for the first elected council. One of the objects of the college is: "To conduct examinations of candidates for admission to the College and/or such other examinations in the various branches of medicine, surgery and the allied arts and sciences as may from time to time be deemed appropriate."

MENTAL HOSPITALS IN SCOTLAND

THE General Board of Control for Scotland (the body responsible in Scotland for the supervision of mental hospitals and of institutions for mental defectives) last week issued its report[2] for 1954, the first separate annual report which it has published since 1938.

At the end of 1954 there were over 25,000 patients in mental and mental-deficiency hospitals in Scotland (about 40% of the total number of patients in all hospitals), and more than two-thirds of the patients admitted to mental hospitals were voluntary, as compared with one-third in 1938.

Commenting on this significant trend, the board says that ". . . the public are becoming increasingly aware that modern methods of treatment such as electro-therapy, insulin therapy and leucotomy offer in many cases increased prospects of early recovery or of amelioration of symptoms." Other factors which have contributed to reducing public prejudice against mental institutions have been the improved amenities (television, libraries, hairdressing facilities for women, brighter furnishings and decorations, and canteens for patients and for visitors, along with more attractive visiting-rooms), better food, and the introduction of the "open-door system" either completely or in part.

The board points out that although many patients are now being treated successfully in outpatient clinics who would otherwise have required inpatient care, there are still accommodation difficulties for institutional treatment, and the lack of junior medical staff and the shortage and poor recruitment of nurses continue to present serious problems.

PETHIDINE

THE Ministry of Health has been asked by the World Health Organisation to bring to the attention of doctors the views of its Expert Committee on Drugs Liable to Produce Addiction on the risk of addiction to pethidine, and the need for the same care in its use as with morphine. The expert committee considers that an important factor in the development of pethidine addiction has been the attitude of physicians towards the drug, based on the widespread belief that it is less dangerous in this respect than morphine. The expert committee is convinced that experience with the drug both in experiments and in clinical practice is contrary to this belief; it is of the opinion that as a potential addicting agent pethidine is no less dangerous than morphine, that its use should be undertaken only with full realisation of this danger, and that its administration should be approached with the same attitude and attended by the same precautions as are recognised for morphine.

1. *S. Afr. med. J.* 1955, **29**, 761.
2. Annual Report of the General Board of Control for Scotland for the Year 1954. H.M. Stationery Office. 1955. Pp. 18. 1s.

THE EDINBURGH SURGEONS' JOURNAL

IN introducing the new *Journal of the Royal College of Surgeons of Edinburgh*, Prof. Walter Mercer, the president, says that its aims are to bring fellows all over the world into closer touch with one another, to report lectures delivered in the college, and to publish articles of surgical and general interest, together with news of college activities. The publication of this inaugural issue, dated September, closely follows the celebration last June of the 450th anniversary of the foundation, when the Duke of Edinburgh, patron of the college, was elected to an honorary fellowship. The journal is handsomely produced and illustrated, and this issue contains a fitting tribute to Sir Henry Wade, president from 1935 to 1937, who died earlier in the year. Our good wishes go to the editor, Mr. John Bruce, vice-president of the college, for the continued success of this venture.

Royal Institute of Public Health and Hygiene

Prof. G. P. Crowden will give the Bengué Memorial Award Lecture on Tuesday, Oct. 18, at 5 P.M., at the Institute, 28, Portland Place, London, W.1. He will speak on Environmental Factors affecting Comfort, Health, and Working Capacity. Mr. Harold C. Edwards, surgeon to King's College Hospital, will deliver the Blackham lecture at the institute on Thursday, Nov. 17, at 5.30 P.M. His subject is the Contribution of War to the Advancement of Surgery.

Royal Statistical Society

The former study circle on medical statistics has now been reconstituted as a full section of the society. Membership is open to all fellows of the society; others wishing to become members of the section, for an annual subscription of 10*s*., should apply to the hon. secretary, M. P. Curwen, Department of Medical Statistics, St. Bartholomew's Hospital, London, E.C.1. Meetings will continue to be held on the last Tuesday of the month at the Westminster Medical School, Horseferry Road, S.W.1. The opening meeting of the new session will be at 6.15 P.M. on Sept. 27, when Dr. J. O. Irwin will describe a Study of the Physiological Effects of Hot Climates.

Nutrition Society

The society is holding a symposium at the National Institute for Medical Research, The Ridgeway, London, N.W.7, on Saturday, Oct. 15, on Energy Expenditure in Man. The chairman will be Prof. R. C. Garry; and the contributors will include Prof. C. G. Douglas, F.R.S., Mr. H. S. Wolff, Dr. O. G. Edholm, Dr. R. Passmore, Dr. J. V. G. A. Durnin, and Mr. H. R. Noltie. Further particulars may be obtained from Dr. R. J. L. Allen, the hon. programmes secretary of the society, c/o Beecham Foods Limited, Brentford, Middlesex.

British Standard for Scalpels

A draft British Standard for surgical scalpels has been prepared and is now being circulated to industrial organisations and others concerned. Comments are invited, and should be sent to the British Standards Institution, 2, Park Street, London, W.1, before Oct. 7.

Tuberculosis Educational Institute

A postgraduate course on tuberculosis for general practitioners will be held at the Royal Berkshire Hospital, Reading, on Saturday and Sunday, Oct. 22 and 23. Further details may be had from the Institute at Tavistock House North, Tavistock Square, London, W.C.1.

Course in Hospital Catering

London teaching hospitals and other hospital authorities in the four Metropolitan regions are invited by the Ministry of Health to nominate candidates for a year's training as catering officers. King Edward's Hospital Fund for London has offered to reserve four places again in their 1956 course. Application forms may be had from the principal, School of Hospital Catering, St. Pancras Hospital, N.W.1.

Royal Appointments

Surgeon Rear-Admiral D. Duncan has been appointed an honorary physician to the Queen, in succession to Surgeon Rear-Admiral R. W. Mussen. Surgeon Rear-Admiral E. T. S. Rudd has been appointed an honorary surgeon to the Queen, in succession to Surgeon Captain A. H. Harkins. Surgeon Captain J. V. Williams has been appointed an honorary physician to the Queen, in succession to Surgeon Rear-Admiral J. Hamilton.

Salaries of Medical Superintendents

The salaries of whole-time medical superintendents engaged wholly in administrative duties have been raised by £150 at each point, and the scales now range from £1500–1700 to £1700–1900.

Experimental Research into Problems of Ageing

The Trustees of the Ciba Foundation invite candidates to submit papers on research relevant to basic problems of ageing, for awards for 1955–56. Further details may be obtained from the director of the Foundation, 41, Portland Place, London, W.1.

Library Association

On Tuesday, Sept. 20, at 7 P.M., the medical section of the association will hold a meeting at Chaucer House, Malet Place, London, W.C.1, at which Lieut.-Colonel F. B. Rogers, director of the Armed Forces Medical Library, Washington, will speak on Problems of Medical Index Publishing.

Mobile Telephone in Hospital

The hospitals where mobile telephones have been installed for the convenience of patients now include Peterborough Memorial Hospital (*Peterborough Standard*, Aug. 19, 1955). The instrument, which is in the casualty ward, is fitted with a coin box similar to that in a telephone kiosk, and can be wheeled anywhere in the ward and plugged in.

Magnetic Call System in Hospital

At St. Thomas's Hospital, London, a magnetic call system for getting in touch with resident medical staff is being installed. The hospital's report for 1954–55 records that by this system, which it is believed St. Thomas's is the first hospital to introduce, it is possible to get in touch with a doctor in any part of the hospital through signals on a small receiver which he carries in his breast pocket. The installation will cost £2200, which is to be paid from endowment funds.

Salaries of Medical Laboratory Technicians

Professional and technical Whitley Council B has agreed on the following salary scales for student and junior technicians:

Student technicians (technicians in training and taking part in the technical work of a pathological laboratory): £190 per annum at age 16, rising by £20 per year of age to £270 at age 20, to £300 at age 21, and by £20 per year of age to £380 at age 25.

Junior technicians (student technicians who have passed the examination for the intermediate diploma of the Institute of Medical Laboratory Technology or the Inter B.Sc. [or equivalent qualification] or who are 30 years of age): as for student technicians plus £25 at all points.

Negotiations on salaries of technicians in other grades are proceeding.

Hospitals, institutions, and nursing-homes where patients with compulsive alcoholism and drug addiction may obtain treatment are listed in a brochure, Alcohol and Drug Addiction, issued free by the Church of England Temperance Society, 4, Palace Gate, Kensington, London, W.8.

A branch of the Multiple Sclerosis Society to serve Brighton, Hove, and district is being formed by Miss E. S. M. Burr, 55, Montefiore Road, Hove, 4.

Diary of the Week

SEPT. 11 TO 17

Tuesday, 13th

ROYAL ARMY MEDICAL COLLEGE, Millbank, S.W.1
5 P.M. Dr. T. C. Hunt: Dyspepsias of Middle Age.

Wednesday, 14th

MIDDLESEX COUNTY MEDICAL SOCIETY
5.30 P.M. (Middlesex Guildhall, S.W.1.) Dr. T. Rowland Hill: National Health Service and its Problems. (John Tate lecture.)

Thursday, 15th

INSTITUTE OF NEUROLOGY, Queen Square, W.C.1
5 P.M. Dr. Walther Riese (U.S.A.): Functions of the Nervous System.

ROYAL SOCIETY OF MEDICINE, Wimpole Street, W.1
5 P.M. *Epidemiology and Preventive Medicine*. Prof. John Dingle (Cleveland): Studies of Respiratory and Other Illnesses in Cleveland Families.

Friday, 16th

INSTITUTE OF NEUROLOGY
5 P.M. Dr. Pearce Bailey (U.S.A.): America's first National Neurological Institute.

ROYAL ARMY MEDICAL COLLEGE
5 P.M. Dr. Richard Lindenberg (Baltimore): Pathology of Head Injury.

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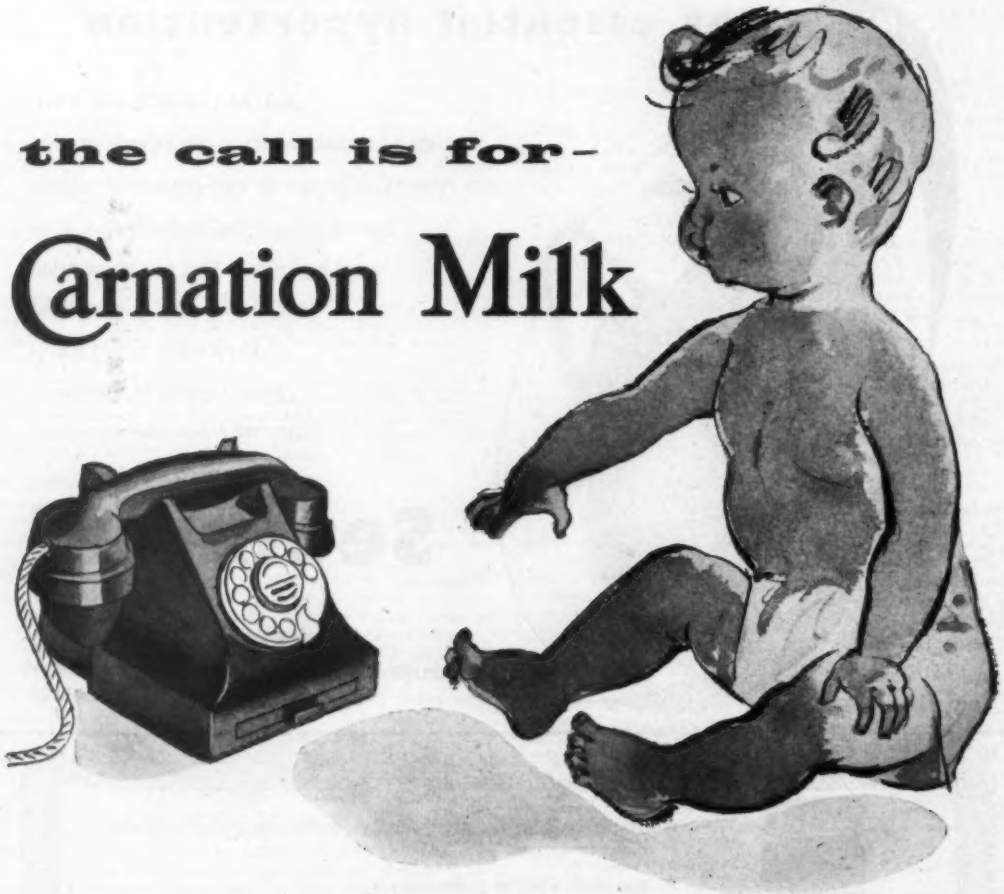

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L.M.S.S.A.

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For regulations apply REGISTRAR, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

MEDICAL RESEARCH COUNCIL. Department of EXPERIMENTAL MEDICINE, CAMBRIDGE. Vacancy for REGISTRAR. The Medical Research Council have a vacancy in the Department of Experimental Medicine, Tennis Court-road, Cambridge, for a research worker of Registrar status (preferably with an M.R.C.P.) to be responsible for the clinical work of the department. The department is engaged in studies of renal function and the control of electrolytes and water, in nutritional work, and in investigating the changes which take place during growth and in disease, but not in evaluating methods of treatment. The work includes studies of normal infants and adults, and of animals. Initial salary will be fixed according to qualifications and experience, and will be £850–£900 or at a point on the scale £950–£50–£1250 p.a., with prospects of promotion to a higher grade. The Council have a scheme for the payment of children's allowances similar to the one in force in the universities. Superannuation will be provided.

Applicants, who should preferably have had some research experience and who intend to make their careers in medical research, should write giving details of education and subsequent career, and the names and addresses of 2 professional referees under whom they have worked, to the Director, Prof. R. A. MCCANCE, at the address given above.

UNIVERSITY OF ABERDEEN. Applications are invited for the post of LECTURER IN PATHOLOGY. Salary scale (*b*), £1100–£1500, or scale (*a*), £700–£1000, with placing according to qualifications. Superannuation (F.S.S.U.) and children's allowance. Part of removal expenses refunded.

Conditions of appointment and forms of application should be obtained from the undersigned, with whom applications (8 copies), giving the names of 3 referees, should be lodged not later than 21st September, 1955. Applicants outside the British Isles may submit 1 copy only.

The University, Aberdeen. W. S. ANGUS, Secretary.

THE UNIVERSITY OF MANCHESTER. Applications are invited from candidates with medical qualifications registrable in this country for the post of LECTURER IN OPHTHALMOLOGY. The successful candidate will be expected to carry out research in the University Department of Ophthalmology at the Manchester Royal Eye Hospital and to assist in the clinical work of this unit. Salary on a scale rising to £2000 p.a., with membership of F.S.S.U. and children's allowance scheme : initial salary according to qualifications and experience.

Applications should be sent not later than 14th September, 1955, to the Registrar, the University, Manchester, 13, from whom further particulars and forms of application may be obtained.

UNITED MANCHESTER HOSPITALS. Manchester ROYAL INFIRMARY : UNIVERSITY DEPARTMENT OF ORTHOPÆDIC SURGERY. Applications are invited for the post of RESEARCH FELLOW (non-resident) to the above University Department. The Fellow will be appointed to undertake Clinical Research into the incidence and natural history of Dupuytren's Contracture. He will work under the general direction of the Surgeon-in-charge of the University Department, and he will be expected to spend up to 2 years on this project. In addition, he will have opportunities of sharing in the general clinical work of the Department. Salary £850–£1000 according to experience, &c., plus travelling expenses. Inquiries about the scope of and the facilities for the proposed research are invited. They should be addressed to Mr. D. Ll. Griffiths, Surgeon-in-charge of the above Department.

Applications, accompanied by the names of 3 referees, should be sent to the Secretary (from whom application forms can be obtained), the United Manchester Hospitals, Manchester Royal Infirmary, Manchester, 13, not later than 10th October, 1955.

AUSTRALIA. UNIVERSITY OF SYDNEY. The Senate will shortly proceed to an appointment to the CHAIR OF MEDICINE. The salary of the appointee will be £A4000 p.a. to which will apply the retirement provisions of the Professorial Superannuation Scheme. In addition, there will be a pension of not less than £A400 p.a. upon retirement after the age of 60 years. Finance is available for home purchase under the Staff Members' Housing Scheme. The Senate reserves the right to fill the Chair by invitation.

Further particulars and information as to the method of application may be obtained from the Secretary, Association of Universities of the British Commonwealth, 36, Gordon-square, London, W.C.1. The closing date for the receipt of applications, in Australia and London, is 31st October, 1955.

AUSTRALIA. UNIVERSITY OF SYDNEY. The Senate will shortly proceed to an appointment to the CHAIR OF SURGERY. The salary of the appointee will be £A4000 p.a. to which will apply the retirement provisions of the Professorial Superannuation Scheme. In addition, there will be a pension of not less than £A400 p.a. upon retirement after the age of 60 years. Finance is available for home purchase under the Staff Members' Housing Scheme. The Senate reserves the right to fill the Chair by invitation.

Further particulars and information as to the method of application may be obtained from the Secretary, Association of Universities of the British Commonwealth, 36, Gordon-square, London, W.C.1. The closing date for the receipt of applications, in Australia and London, is 31st October, 1955.

UNIVERSITY COLLEGE, Ibadan, Nigeria. Applications are invited for SENIOR LECTURESHIP IN ANÆSTHETICS ; appointee will be Honorary Consultant to the University College Hospital. Undergraduate teaching is expected to begin soon after the completion of the new hospital next year ; at present a department is being built up and there is great opportunity for research into anæsthesia under tropical conditions. Thoracic surgery is undertaken and is increasing. Salary scale at present : £1750–£100–£2250 p.a. Appointment for 3 years in first instance, thereafter to retiring age. Child allowance £50 p.a. per child (maximum £150 p.a.) for children resident in Nigeria or £100 p.a. per child (maximum £300 p.a.) for children resident elsewhere. Part furnished accommodation at rent not exceeding 7·7 % of salary. First-class passages for member of staff, wife, and children (under 11 years) on appointment, annual overseas leave and termination. F.S.S.U. Outfit allowance £60 on first appointment.

Applications (12 copies), stating age, full qualifications and experience, and naming 3 referees, to be received by 26th September, 1955, by the Secretary, Senate Committee on Colleges Overseas in Special Relation, University of London, Senate House, W.C.1, from whom further particulars may be obtained.

Hospital Services : Senior Appointments

NORTH EAST METROPOLITAN REGIONAL HOS-PITAL BOARD.

Full-time CONSULTANT PSYCHIATRIST to Runwell Hospital, to take charge of 1 of the 3 clinical divisions. (House available.)

Full-time ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer grade) at South Ockendon Group of hospitals, experienced in mental deficiency. (Normally non-resident post.)

Full-time medically qualified CONSULTANT BIOCHEMIST to North Middlesex Hospital and Annexes. Good opportunities for research in clinical problems. Small Isotope Laboratory under construction.

Full-time CONSULTANT CLINICAL PATHOLOGIST with experience in Biochemistry, Hertford Group (duties mainly at Hertford County Hospital) to work in collaboration with Area Pathologist. Further particulars on application.

Separate applications (6 copies), stating post concerned, and names of 3 referees, should reach the Secretary, 11A Portland-place, London, W.1, by Saturday, 24th September, 1955.

NORTH WEST METROPOLITAN REGIONAL HOS-PITAL BOARD.

(1) ASSISTANT GERIATRICIAN (whole-time), Senior Hospital Medical Officer grade, West Middlesex Hospital, Isleworth, Middlesex (1142 Beds). Candidates should have good general medical experience as well as experience in geriatric medicine.

Applications by 10th October, 1955.

(2) CONSULTANT RADIOLOGIST (2 half-days a week), Highlands Hospital, Winchmore Hill, N.21 (818 Beds).

Applications by 17th October, 1955.

(3) CONSULTANT NEUROPATHOLOGIST (5 half-days a week), West End Hospital for Neurology and Neurosurgery, Dean-street, W.1 (35 Beds).

Applications by 24th October, 1955.

Hospitals may be visited by direct appointment.

(4) OPHTHALMOLOGIST (Senior Hospital Medical Officer grade), 2½ hours a week at each of the London County Council clinics at :—

School Treatment Centre, 11, Clifton-terrace, N.4. Thursday afternoons.

Highgate School Treatment Centre, Chester-road, Swains-lane, N.19. Tuesday mornings.

Candidates may apply for either or both of these appointments. Clinics may be visited by arrangement with the Divisional Health Officer, 53, Clerkenwell-road, E.C.1.

Applications by 21st October, 1955.

Application forms obtainable from, and returnable to, Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1.

WHIPPS CROSS HOSPITAL, E.11. Locum Radiologist required to carry out 5 sessions per week for 2 weeks commencing 12th September, 1955.

Write or phone Hospital Secretary, Whipps Cross Hospital, Whipps Cross-road, E.11 (Tel. : LEYtonstone 5522).

RE-ADVERTISEMENT

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment, for 4–5 notional half-days, of REGIONAL PSYCHIATRIST who will act as Adviser to the Board under the general supervision of the Senior Administrative Medical Officer. These sessions do not include work of a clinical nature. Salary in accordance with nationally negotiated terms.

Applications, with the names of 3 referees, should be received by the Senior Administrative Medical Officer, 11, Portland-place, London, W.1, by 24th September, 1955.

ST. GEORGE'S HOSPITAL, S.W.1. Applications are invited for the post of Part-time CONSULTANT in Physical Medicine. Candidates must hold the Diploma of Physical Medicine. The appointment will be for 3 notional half-days per week and remuneration and conditions of service will be those applicable to part-time Consultant staff under the National Health Service. The successful candidate will be required to perform a part, or the whole, of the duties attached to this appointment at the Grove Hospital, Tooting.

Applications, stating age, education, qualifications and experience, together with the names of 3 referees, should reach the undersigned not later than 15th October, 1955.

P. H. CONSTABLE, House Governor.

BIRMINGHAM REGIONAL HOSPITAL BOARD. South WORCESTERSHIRE GROUP. Whole-time ASSISTANT PSYCHIATRIST (£1500–£1950 p.a.). Duties at Powick Hospital, near Worcester (1076 Beds). Experience specialty and D.P.M. required. Non-resident.

Application (15 copies), stating name, age, nationality, qualifications, present and previous appointments, and details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, before 26th September, 1955.

BIRMINGHAM REGIONAL HOSPITAL BOARD. Walsall GROUP. Part-time CONSULTANT OBSTETRICIAN/GYNÆCOLOGIST (4 notional half-days weekly). Duties at Walsall General (Sister Dora) (181 Beds) and Manor (300 Beds) Hospitals. Experience specialty/higher qualification essential.

Applications (15 copies), naming 3 referees, to Secretary, Regional Hospital Board, 10, Augustus-road, Birmingham, 15, before 26th September, 1955. Candidates may visit hospitals.

LEEDS REGIONAL HOSPITAL BOARD. Whole-time CONSULTANT PSYCHIATRIST for duties mainly at the De la Pole Hospital, Willerby, near Hull (1000 Beds—including Neurosis Unit for female patients), together with duties at the Western General Hospital, Hull, the Bartholomew Hospital, Goole, and at a proposed Aftercare Centre with the Hull Corporation. Candidates should hold high qualifications in medicine and possess the D.P.M. The successful candidate will be non-resident but will be required to reside within 5 miles of the De la Pole Hospital.

Applications (12 copies), stating age, qualifications, and details of present and previous appointments with dates, together with the names of 3 referees, to the Secretary, Park-parade, Harrogate, not later than 30th September, 1955.

LEEDS REGIONAL HOSPITAL BOARD. Part-time CONSULTANT ANÆSTHETIST (8 sessions per week) for duties at hospitals in the Huddersfield area. The person appointed to reside in Huddersfield.

Applications (12 copies), stating age, qualifications, and details of present and previous appointments with dates, together with the names of 3 referees, to the Secretary, Park-parade, Harrogate, not later than 30th September, 1955.

LEEDS REGIONAL HOSPITAL BOARD. Part-time Locum CONSULTANT RADIOLOGIST (9 sessions) for duties at hospitals in the Bradford A Group. Appointment will be for a minimum period of 18 months.

Applications, stating age, qualifications, and experience, together with the names and addresses of 3 referees, to the Secretary, Park-parade, Harrogate, by 24th September, 1955.

OXFORD REGIONAL HOSPITAL BOARD. Assistant RADIOTHERAPIST (Senior Hospital Medical Officer grade), whole-time, for the Northampton Area Department of Radiotherapy. Candidates should be in possession of the D.M.R. (T.) and have had wide experience in radiotherapy. The department at Northampton General Hospital may be visited by arrangement with the Medical Director.

Applications (12 copies), giving age, qualifications, experience, and naming 3 referees, to reach the Secretary, Oxford Regional Hospital Board, 43, Banbury-road, Oxford, by 15th October, 1955.

RUTHIN CASTLE, North Wales. The Board invites applications for the position of ASSISTANT PHYSICIAN to this Clinic. Candidates are expected to have a higher degree in medicine and to have experience as Senior Registrar or of several years in general practice. Salary, according to experience and not less than £1500 p.a. with residence.

For further particulars, apply Senior Physician, Ruthin Castle, Ruthin, Denbighshire.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole- time ASSISTANT RADIOLOGIST for Leicester Royal Infirmary and Leicester General Hospital. The successful candidate will work under the direction of the Consultant Radiologist in charge and will be required to reside within 10 miles of Leicester Royal Infirmary. Candidates should possess a Diploma in Radiology. Salary scale £1500–£50–£1950.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, 10. Forms to be returned by 8th October, 1955.

SOUTH RUISLIP, MIDDLESEX. THE USAF HOS-PITAL, SOUTH RUISLIP, MIDDX, has a vacancy on the Medical staff for a qualified OBSTETRICIAN AND GYNÆCOLOGIST.

Interested Medical Officers should contact the Hospital Commander, U.S. Air Base, South Ruislip.

AUSTRALIA. THE BROKEN HILL AND DISTRICT HOSPITAL, P.O. Box 457, BROKEN HILL, NEW SOUTH WALES, AUSTRALIA. Applications are invited for the position of RESIDENT SURGEON SPECIALIST from qualified persons, preferably with a Diploma of a Royal College of Surgeons, to the above Hospital, situated in a large industrial field, and which is a self-contained unit of 320 beds. Daily average of inpatients 289, outpatients attendances approximately 100,000 p.a. This officer will act as an Assistant to the Chief Resident Medical Officer or Medical Superintendent. He will perform the operational and surgical work of the Institution, but, as and when required, will have the assistance of the Honorary Surgical Staff, and visiting Town Practitioners. The position offers a unique opportunity for advancement in the surgical field. The salary range will be £2100 p.a.–£2500 p.a., according to experience and qualifications, 30 days annual leave, and other exceptional conditions. In addition to the above salary, full board and lodgings is available in the case of single applicants, and a residence is available for married applicants, with fuel, light and water added.

Air-mail applications, addressed to the undersigned, are to state age, marital status, particulars of experience, qualifications, and enclose copy only of credentials.

R. H. NANKIVELL, Secretary and Business Manager.

AUSTRALIA. THE BROKEN HILL AND DISTRICT HOSPITAL, P.O. Box 457, BROKEN HILL, NEW SOUTH WALES, AUSTRALIA. Applications are invited from qualified persons for the position of RESIDENT PHYSICIAN, preferably with a Diploma of a Royal College of Physicians, to the above Hospital, situated in a large industrial field, and which is a self-contained unit of 320 beds. Daily average of inpatients 289, outpatients attendances approximately 100,000 p.a. The salary range will be £2250 p.a.–£2650 p.a., according to experience and qualifications, 30 days annual leave, and other exceptional conditions. The successful applicant will be the Chief Resident Medical Officer, acting in the capacity of a Medical Superintendent. The training of Junior Resident Medical Officers will also be his responsibility. In addition to the above salary, full board and lodgings is available in the case of single applicants, and a residence is available for married applicants, with fuel, light and water added.

Air-mail applications, addressed to the undersigned, are to state age, marital status, particulars of experience, qualifications, and enclose copy only of credentials.

R. H. NANKIVELL, Secretary and Business Manager.

CANADA. VICTORIA HOSPITAL, London, Ontario, CANADA. DIAGNOSTIC RADIOLOGIST. Applications are invited from qualified Radiologists with from 1 to 4 years teaching hospital experience, for the post of Assistant Radiologist at a 900-Bed teaching hospital. New and well-equipped Radiology Department. Attractive city and university centre. Population 100,000. Salary $6000–$12,000 p.a.

Applications to Superintendent, Victoria Hospital, London, Ontario.

JERUSALEM. THE OPHTHALMIC HOSPITAL OF ST. JOHN OF JERUSALEM, JORDAN. A WARDEN (Surgeon-in-Charge) is required in July, 1956. Salary corresponding to National Health Service Consultant scale with appropriate allowances.

For further particulars, terms of service, &c., apply to the Secretary, Order of St. John, St. John's-gate, Clerkenwell, E.C.1.

NEW ZEALAND. THE OTAGO HOSPITAL BOARD, UNIVERSITY OF OTAGO, DUNEDIN, NEW ZEALAND. ASSISTANT DIRECTOR, Anæsthetic Services, Otago Hospital Board. LECTURER IN ANÆSTHETICS, Otago Medical School. Applications are invited for the above position, commencing on 1st January, 1956, from candidates who :—

(*a*) hold a higher qualification in anæsthetics and have had 5 or more years practical experience in this specialty, and have been qualified for not less than 10 years, or

(*b*) have been qualified for a period of 15 years or more, and have had 8 years or more practical experience in anæsthetics.

The position is a full-time one, and private practice is not permitted. The position is designed as that of Senior Specialist under the Hospital Employment (Medical Officers) Regulations and Amendments.

Salary scale : £1690 p.a.–£1940 p.a., plus general wage increase of £81 7s. p.a. Duties will include the practical teaching of anæsthetics to Medical and Dental Students. The position is non-resident.

Application forms and conditions of appointment may be obtained from THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2; the office of the High Commissioner for New Zealand, 415, Strand, London, or from the undersigned. Applications, stating age, qualifications, and experience, together with testimonials and Health and Radiological Certificates, will be received by the undersigned until 10 A.M. on Tuesday, 25th October, 1955. W. A. WILLIAMSON, Secretary, Otago Hospital, P.O. Box 946, Dunedin, New Zealand.

Hospital Services : Junior Appointments

ACTON HOSPITAL, Gunnersbury-lane, W.3. Senior HOUSE OFFICER (resident) required for casualty duties. Post vacant 5th October, 1955.

Applications to Hospital Secretary within 7 days.

BATTERSEA GENERAL HOSPITAL, Battersea Park, S.W.11. CASUALTY OFFICER, residence optional. House Officer or Senior House Officer grade according to experience. Vacant 21st September, not pre-registration.

Apply Hospital Secretary, enclosing 2 copies of recent testimonials, by 14th September, 1955.

BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.11. HOUSE PHYSICIAN (resident), vacant 15th October, 1955. Open to registered practitioners and pre-registration candidates.

Apply Hospital Secretary enclosing copies of 3 recent testimonials by 21st September, 1955.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. SENIOR HOUSE OFFICER (Anæsthetist), whole-time, resident, for 6 months, renewable. Previous experience in anæsthesia essential. Hospital is recognised for the D.A. and F.F.A.R.C.S.

Applications, with copies of 2 testimonials or names of 2 referees, to Medical Director by 21st September, 1955.

CONNAUGHT HOSPITAL, Walthamstow, E.17. House PHYSICIAN required for a period of 6 months. Pre- or post-registration. Post vacant 28th September, 1955.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to the Secretary, Hospital Management Committee, Forest Group, Langthorne-road, E.11.

CONNAUGHT HOSPITAL, Walthamstow, E.17. (118 Beds.) Applications are invited for the post of CASUALTY OFFICER AND DEPUTY RESIDENT SURGICAL OFFICER, graded as Senior House Officer, vacant now. Recognised for F.R.C.S. Salary £745 p.a., less £150 p.a. for board, lodging, &c.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Hospital Management Committee, Forest Group, Langthorne-road, E.11.

DREADNOUGHT SEAMEN'S HOSPITAL, Greenwich, S.E.10. There will be a vacancy for a NON-RESIDENT CASUALTY AND RECEIVING-ROOM OFFICER on 23rd September. Salary £745 p.a. Post recognised by the Royal College of Surgeons.

Applications, stating age, qualifications, and experience and giving names of 3 recent referees, should reach the undersigned not later than 16th September. F. A. LYON, Secretary.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from pre-registration and registered Women medical practitioners for the post of FIRST HOUSE SURGEON, with charge of general surgical beds. Appointment for 6 months from 1st November, 1955. Salary according to Ministry of Health scale for House Officers.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 14th September, 1955.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from pre-registration and registered Women medical practitioners for the post of SECOND HOUSE PHYSICIAN. Appointment for 6 months from 1st November, 1955. Salary according to Ministry of Health scale for House Officers.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 14th September, 1955.

HACKNEY HOSPITAL, London, E.9. (General—844 Beds.) Applications for the 12-month resident appointment of CASUALTY OFFICER (Senior House Officer grade), from 1st September, should reach the Secretary, above address, quoting HH SCO.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL, Ducane-road, London, W.12. 5 HOUSE PHYSICIANS (general medicine) required 1st November. 2 of these posts will give experience in rheumatism and neurology.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Secretary, Board of Governors, by 17th September.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH, 60, Grove End-road, London, N.W.8. Applications are invited from registered medical practitioners (Male) for the appointment of HOUSE SURGEON, to become vacant on Tuesday, 4th October. This post is recognised for purposes of F.R.C.S. (Eng.). Appointment will be for a period of 6 months. National Health Service salary.

Applications should reach the Secretary on or before Monday, 12th September, 1955, together with copies of 3 recent testimonials.

LAMBETH HOSPITAL, Brook-drive, Kennington, S.E.11. Applications are invited from pre-registered and registered medical practitioners for the position of RESIDENT HOUSE PHYSICIAN, falling vacant in early October. Salary in accordance with the National Health Service Act.

Forms of application to be obtained from the Physician-Superintendent at the Hospital. Stamped addressed envelope should be enclosed.

LAMBETH HOSPITAL, Kennington, S.E.11. Applications are invited from pre-registration and registered medical practitioners for the post of RESIDENT HOUSE SURGEON in the Obstetric and Gynæcological Unit, vacant on 16th October, 1955. The Hospital is recognised for the M.R.C.O.G. and the D.Obst.R.C.O.G.

Forms of application to be obtained from the Physician-Superintendent on receipt of a stamped addressed envelope.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of SENIOR REGISTRAR to the E.N.T. Department. The post becomes vacant on 1st November, 1955. Candidates should be Fellows of the Royal College of Surgeons.

Applications (12 copies), giving the names and addresses of 3 referees, should be received by the undersigned by 28th September, 1955. H. BRIERLEY, House Governor.

MIDDLESEX HOSPITAL, W.1. Applications invited for posts of SENIOR MEDICAL REGISTRAR and MEDICAL REGISTRAR, vacant 1st January.

Rules and application forms, obtainable from Deputy Superintendent, should be returned, naming 2 referees, by 30th September.

MIDDLESEX HOSPITAL, W.1. Applications invited for 1 post of SENIOR SURGICAL REGISTRAR and 2 posts of SURGICAL REGISTRAR, vacant 1st January.

Rules and application forms, obtainable from Deputy Superintendent, should be returned, naming 2 referees, by 30th September.

MIDDLESEX HOSPITAL, W.1. Applications invited for post of OBSTETRIC AND GYNÆCOLOGICAL REGISTRAR, vacant 1st January. Duties at the Middlesex Hospital and the Hospital for Women, Soho.

Rules and application forms, obtainable from Deputy Superintendent, should be returned, naming 2 referees, by 30th September.

MIDDLESEX HOSPITAL, W.1. Applications invited for post of PÆDIATRIC REGISTRAR, vacant 1st January.

Rules and application forms, obtainable from Deputy Superintendent, should be returned, naming 2 referees, by 30th September.

MIDDLESEX HOSPITAL, W.1. Applications invited for post of SENIOR REGISTRAR to the Fracture and Orthopædic Department.

Rules and application forms, obtainable from Deputy Superintendent, should be returned, naming 2 referees, by 30th September.

MIDDLESEX HOSPITAL, W.1. Applications invited for post of SENIOR REGISTRAR to E.N.T. Department, vacant 1st January.

Rules and application forms, obtainable from Deputy Superintendent, should be returned, naming 2 referees, by 30th September.

MILE END HOSPITAL, Bancroft-road, E.1. (475 Beds.) Applications are invited for the post of CASUALTY AND RECEIVING-WARD OFFICER (Senior House Officer).

Application forms, obtainable from the Physician-Superintendent, should be returned by 16th September, 1955, with copies of not more than 3 testimonials.

NELSON HOSPITAL, Kingston-road, Merton, S.W.20. RESIDENT HOUSE PHYSICIAN AND ANÆSTHETIST (Senior House Officer grade), vacant now.

Applications, stating age, experience and qualifications, with copies of testimonials and the name of 1 referee, should be sent to the Group Secretary, St. Helier Hospital, Carshalton, Surrey.

ROYAL MASONIC HOSPITAL, Ravenscourt Park, London, W.6. Applications are invited for the post of RESIDENT MEDICAL REGISTRAR. Appointment from 1st November. Gross salary—first year £850 (residential emoluments of £130 deductible); second year £965 (residential emoluments of £145 deductible).

Please state age, qualifications, past and present appointments, and include 2 recent testimonials and/or the names of 2 referees. Applications should reach the undersigned (from whom further information may be obtained) on or before 16th September, 1955.

R. E. LAWSON, Secretary and House Governor.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, London, W.1. Locum RESIDENT SENIOR HOUSE OFFICER required from 28th September, for 1 week.

Applications to the House Governor, 234, Great Portland-street, London, W.1.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, London, W.1. Applications are invited for the posts of RESIDENT SENIOR HOUSE OFFICERS (2 vacancies), for a period of 6 months. 1 to commence duties on 21st October and 1 on 24th November.

Applications to be received by 16th September. Forms of application can be obtained from the House Governor at 234, Great Portland-street, London, W.1.

ROYAL NATIONAL THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.1, and Golden-square, W.1. There will be a vacancy for an ANÆSTHETIC REGISTRAR (resident or non-resident) as from 1st November, 1955, to work as required at both hospitals. Applicants should have had some special experience in anæsthesia and preferably should hold, or be working for, a higher qualification in that specialty. Registrar grading and salary in accordance with the terms and conditions of service under the National Health Service Act.

Applications, giving full particulars of age, qualifications and experience, with the names of 2 referees, should be sent to the House Governor by 30th September.

ROYAL NATIONAL THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.1, and Golden-square, W.1, with which is associated the Institute of Laryngology and Otology (University of London). General Practitioner CLINICAL ASSISTANTS AND OUTPATIENT ASSISTANTS. These appointments give those engaged in general practice who are able to attend for 2 sessions weekly commencing in October, 1955, the opportunity of widening their clinical experience in the specialty. The Clinical Assistantships are honorary, but at the end of a 3-month trainee period the holders will be appointed as Outpatient Assistants with remuneration under paragraph 10 (*b*) of the National Health Service terms and conditions of service.

Further particulars may be obtained from the House Governor.

ROYAL NORTHERN HOSPITAL, Holloway, London, N.7. (279 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR required in the Orthopædic and Fracture Department of the above Hospital. Candidates may visit the Hospital by direct appointment.

Application forms obtainable from, and returnable to, the Secretary, Royal Northern Hospital, N.7, by 20th September, 1955

ROYAL COLLEGE OF SURGEONS OF ENGLAND AND ST. JAMES' HOSPITAL, Balham. Applications are invited for a 2-year appointment of REGISTRAR in Pathology who will work the first year at St. James' Hospital (resident or non-resident) and the second year in the Department of Pathology at the Royal College of Surgeons of England.

Further particulars and application forms, which must be completed as soon as possible, from Group Secretary, St. James' Hospital, Balham, S.W.12. (Send stamped addressed foolscap envelope.)

ROYAL FREE HOSPITAL, W.C.1. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER to the Radiotherapy Department. Applicants should be registered medical practitioners, and the appointment is suitable for a candidate doing a postgraduate course in radiotherapy. The appointment is for 1 year in the first instance. Salary and conditions of service in accordance with the terms laid down by the Ministry of Health.

Application forms may be obtained from the Secretary to the Board of Governors, The Royal Free Hospital, Gray's Inn-road, London, W.C.1, to whom they should be returned not later than 30th September, 1955.

SOUTH LONDON HOSPITAL FOR WOMEN, Clapham Common, S.W.4. Applications are invited from pre-registration and registered Female medical practitioners for the appointment of OBSTETRIC HOUSE SURGEON at the above Hospital. Recognised for the M.R.C.O.G. Appointment is for 6 months from 20th November, 1955.

Forms of application from the Secretary.

SOUTH LODGE HOSPITAL, World's End-lane, N.21. HOUSE OFFICER (first, second, or third post—not pre-registration), resident. General duties as directed by the Medical Superintendent. National Health Service salary plus £50 p.a. Vacant 1st November, 1955.

Applications, with names and addresses of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee, Chase Farm Hospital, The Ridgeway, Enfield, Middlesex.

ST. CHARLES' HOSPITAL, Ladbroke-grove, W.10. (581 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (casualty), resident or non-resident.

Applications, stating age, qualifications and experience, together with the names and addresses of 2 referees, to be forwarded to the Hospital Secretary immediately.

ST. JAMES' HOSPITAL, Balham, S.W.12. Locum REGISTRAR (Anæsthetics) required 4th–31st October.

Applications, giving full details, and names of 2 referees, to Group Secretary at above address.

ST. MARY'S HOSPITAL, W.2. Applications are invited for the post of Part-time OUTPATIENT SURGICAL ASSISTANT for 3 notional half-days per week (Wednesday, A.M., Friday, P.M., Saturday, A.M.) graded Senior House Officer. The appointment will be for a first period of 12 months and the successful candidate will be required to commence duties as soon as possible.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service grading of previous and present appointments, together with names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, by 21st September, 1955.

ST. THOMAS'S HOSPITAL, London, S.E.1. Resident ASSISTANT SURGEON (Senior Registrar grade). 1 year in the first instance from 1st December, 1955, renewable for a second year.

Applications, naming 2 referees, to the Clerk of the Governors by 24th September, 1955.

ST. THOMAS'S HOSPITAL, London, S.E.1. Senior REGISTRAR to the Diagnostic X-ray Department for 1 year in the first instance.

Applications, including names and addresses of 2 referees, to the Clerk of the Governors by 24th September, 1955.

WANSTEAD HOSPITAL, Harmon Hill, E.11. (191 Beds.) Applications are invited for the post of CASUALTY OFFICER, recognised for F.R.C.S. Graded Senior House Officer. Salary £745 p.a., less £150 p.a. for board, lodging, &c.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to the Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE OFFICER (Male) for special departments (E.N.T., paediatrics, ophthalmology, dermatology, &c.). 6-month appointment, now vacant. Offers good experience before general practice. Not suitable for pre-registration candidates.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE SURGEON (Male) required at above Hospital for Traumatic and Orthopædic Unit. 6-month appointment, vacant on 1st October. Preference given to pre-registration candidates.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital immediately.

AYLESBURY, BUCKINGHAMSHIRE. STOKE MANDEVILLE HOSPITAL. Applications are invited for the post of RESIDENT HOUSE PHYSICIAN in the Department of Medicine. Pre-registration post but registered practitioners may apply. Duties include responsibility for 15 tuberculosis beds. Post vacant 2nd October, 1955.

Applications, with copies of 2 testimonials, to the Administrative Officer.

AYLESBURY, BUCKINGHAMSHIRE. ROYAL BUCKINGHAMSHIRE AND ASSOCIATED HOSPITALS MANAGEMENT COMMITTEE. Applicants are invited for the post of SENIOR HOUSE OFFICER (anæsthetics) to the Department of Anæsthetics for the Aylesbury Group of hospitals. Recognised for D.A. and F.F.A.R.C.S. Salary £745 p.a., with an appropriate deduction (maximum of £150 p.a.) if resident.

Applications, giving full details of experience, and 2 names for reference, to the Secretary to the Management Committee, 9, Bicester-road, Aylesbury.

BANGOR. ST. DAVID'S HOSPITAL. (136 Beds and Cots. Specialist Hospital for obstetrics, gynæcology and pædiatrics. Part II Midwifery Training School.) Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER in the Gynæcological and Obstetrical Department of the above Hospital. Previous experience in obstetrics is essential. In the first instance, the post will be in gynæcology—there will be opportunity for transfer to the Obstetrical Department at the end of 6 months. The post is recognised by the Royal College of Obstetricians and Gynæcologists for the Membership examination. Salary according to scale. Post vacant 1st October, 1955.

Applications, stating age, qualifications and experience, together with copies of 3 recent testimonials, to be forwarded to the Group Secretary, Caernarvon and Anglesey Hospital Management Committee, Plas Gwyn, Ffriddoedd-road, Bangor, within 10 days of appearance of this advertisement.

BARRY ACCIDENT AND SURGICAL HOSPITAL. SENIOR HOUSE OFFICER required immediately at above Hospital. Staffed by whole-time Consultant Surgeon and Senior Casualty Officer. Excellent experience given in general surgery.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

BARROW-IN-FURNESS. NORTH LONSDALE HOSPITAL. MANCHESTER REGIONAL HOSPITAL BOARD. Applications are invited for a post of SURGICAL REGISTRAR (resident or non-resident) at the above Hospital, vacant at end of October. Post recognised for F.R.C.S.

Applications to Group Secretary, Barrow and Furness Hospital Management Committee, 52, Paradise-street, Barrow-in-Furness, not later than 23rd September, 1955.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. (229 Beds.) HOUSE SURGEON (first, second, or third post), vacant shortly. General surgical duties, some orthopædics. Offering good opportunity for general experience in busy acute General Hospital. Married quarters available. Recognised for F.R.C.S. Approved pre-registration post. Fully qualified practitioners may apply.

Applications to Group Secretary.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. (229 Beds.) ORTHOPÆDIC HOUSE SURGEON (first, second, or third post). Offers good opportunity for general experience in busy acute general hospital. Approved pre-registration post. Fully qualified practitioners may apply. Recognised for F.R.C.S.

Apply to Group Secretary.

BIRMINGHAM AND MIDLAND EAR AND THROAT HOSPITAL, Edmund-street, BIRMINGHAM, 3. HOUSE OFFICER required. Pre-registration considered.

Detailed applications, with copies of 2 recent testimonials, to Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL. (780 Beds.) SENIOR HOUSE OFFICER (anæsthetics), resident, required 1st October. Recognised for D.A. and F.F.A.R.C.S. Extensive experience in anæsthetics not necessary. Duties include list and emergency work in general surgery, gynæcology, obstetrics, and E.N.T. at hospitals in Group.

Detailed applications, with copies of 3 recent testimonials, to Secretary.

BISHOP AUCKLAND, co. DURHAM. THE GENERAL HOSPITAL. (350 Beds.) SOUTH WEST DURHAM HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required. Recognised pre-registration post.

Apply, naming 2 referees, to K. G. T. LUXFORD, Group Secretary, at the above address.

BISHOP'S STORTFORD AND DISTRICT HOSPITAL, Rye-street, BISHOP'S STORTFORD, HERTS. (67 Beds—medical, surgical and maternity. Midway between London and Cambridge. Main Line Railway from Liverpool Street.) Applications are invited from registered medical practitioners for the appointment of RESIDENT SENIOR HOUSE OFFICER. Appointment to commence as soon as possible. Salary £745 p.a.

Applications, stating age, nationality, qualifications and experience, with copies of recent testimonials or names of referees, should be sent to the Hospital Secretary, Haymeads Hospital, Bishop's Stortford, Herts.

BRISTOL. SOUTHMEAD GENERAL HOSPITAL GROUP MANAGEMENT COMMITTEE. Required immediately at Southmead Hospital (571 Beds including 133 maternity) SENIOR HOUSE OFFICER (pathology). General experience in clinical pathology, including Blood Transfusion Service duties.

Applications to be made to Group Secretary, Southmead Hospital, Bristol.

BROXBURN, WEST LOTHIAN. BANGOUR GENERAL HOSPITAL. E.N.T. UNIT. Applications are invited for the post of REGISTRAR in the E.N.T. Unit at Bangour General Hospital, Broxburn, which is 15 miles from Edinburgh, which carries certain minimal duties at the Royal Infirmary, Edinburgh. The Unit comprises 30 Beds and also undertakes oral dental surgery. Salary and conditions of service will be in accordance with the regulations.

Applications, giving age, qualifications, and particulars of previous experience, should be lodged with the Group Medical Superintendent, Bangour General Hospital, Broxburn, West Lothian.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, BOSCOMBE. (494 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE PHYSICIAN. The appointment which is recognised for pre-registration purposes becomes vacant on 6th October.

Applications to the Deputy Hospital Secretary.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road, BOSCOMBE. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Locum HOUSE PHYSICIAN required immediately for a few weeks.

Applications to the Deputy Hospital Secretary.

BENENDEN SANATORIUM (Civil Service Sanatorium Society), BENENDEN, near CRANBROOK, KENT. SENIOR HOUSE OFFICER (resident). Applications are invited from registered medical practitioners (Male or Female), for the resident post of Senior House Officer. Salary £650 p.a. with free board and lodgings. The Sanatorium is independent of the National Health Service. Superannuation scheme in operation. The Sanatorium of 208 Beds is for the treatment of adult male and female patients with pulmonary disease, tuberculous and non-tuberculous. New major Thoracic Surgical Unit just opened.

Applications, stating age, qualifications, previous experience with copies of testimonials, should be sent to Chief Medical Officer as soon as possible.

BURTON-ON-TRENT GENERAL HOSPITAL. (251 Beds.) Locum HOUSE OFFICERS (surgery) required at above Hospital.

Applications to Group Secretary.

BURTON-ON-TRENT GENERAL HOSPITAL. (251 Beds.) HOUSE SURGEON required 1st October, 1955. Pre-registration post.

Applications to the Group Secretary at the Hospital.

BURTON-ON-TRENT GENERAL HOSPITAL. Resident ANÆSTHETIST (Junior Hospital Medical Officer) required as from 1st November, 1955. (Non-resident considered.)

Applications to Group Secretary.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. House SURGEON for 6 months from 17th October. Recognised Pre-registration Service.

Apply stating age, nationality, qualifications and experience with dates, and copies of 3 testimonials, to the Secretary by 15th September. Interviews 19th September.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (276 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (casualty), which becomes vacant early in October, 1955. Salary £745 p.a. Recognised for the F.R.C.S.

Applications to be sent to the Hospital Secretary at the above Hospital, together with copies of 3 recent testimonials.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (276 Beds.) GENERAL SURGICAL AND UROLOGICAL HOUSE SURGEON (pre-registration or third post). The above post, which is recognised for the F.R.C.S., becomes vacant early in October, 1955. National Health Service salary and conditions.

Applications, together with copies of 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CARDIFF. ROYAL HAMADRYAD GENERAL AND SEAMEN'S HOSPITAL. CARDIFF HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (medical) required at above Hospital, which caters for acute general medical and surgical cases. Hospital contains acute Medical Unit, General Surgical and Genito-urinary Units and outpatient facilities; also certain amount of casualty work. Consultant staff drawn mostly from United Cardiff Hospitals. Post for 1 year and presents facilities for postgraduate study.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARSHALTON. QUEEN MARY'S HOSPITAL FOR CHILDREN. (General Children's Hospital of 818 Beds.) HOUSE PHYSICIAN (Senior House Officer). Care of acute medical, rheumatism and poliomyelitis beds. Position vacant mid-October.

Applications, stating age, qualifications and experience, with copies of 3 testimonials, should reach the Secretary by 24th September, 1955.

CARSHALTON, SURREY. ST. HELIER HOSPITAL. CASUALTY OFFICER (Senior House Officer), vacant end of September. Recognised for F.R.C.S.

Applications, stating age, experience and qualifications, with copies of recent testimonials and the names of 2 referees, to the Group Secretary at above address.

CARSHALTON, SURREY. ST. HELIER HOSPITAL. (741 Beds.) SURGICAL REGISTRAR to 1 of the 2 general Surgical Units, comprising 70 Beds.

Application forms, obtainable from the Group Secretary, Management Committee Offices, St. Helier Hospital, to be returned not later than 23rd September.

CARSHALTON, SURREY. ST. HELIER HOSPITAL. Locum Whole-time SENIOR SURGICAL REGISTRAR required immediately until 2nd October.

Apply to Group Secretary at above address, stating age, qualifications, and experience, with the names of referees.

CHICHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR in Gynæcology and Obstetrics. This appointment for 1 year (renewable) will be vacant 16th October. Gynæcological beds and clinics at Royal West Sussex and St. Richard's Hospitals, Chichester; 16-Bed Obstetric Unit at St. Richard's; and relief duties at 50-Bed unit at Rustington. Residence at St. Richard's Hospital. Previous experience in both branches essential. Hospitals may be visited by appointment with Consultant. Canvassing disqualifies. Salary (Whitley scale) £850 first, £965 second year, less (at present) £165 p.a. for residence. National Health Service superannuation scheme.

Application forms, to be had from Group Secretary, 174, Broyle-road, Chichester, must be submitted within 14 days of this notice.

CHELMSFORD AND ESSEX HOSPITAL. (162 Beds.) Applications are invited for the post of RESIDENT HOUSE SURGEON (pre-registration post). The post will become vacant on 29th September, and offers good surgical experience and is recognised for the F.R.C.S.

Applications, together with 2 recent testimonials, to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botley's Park War Hospital). (430 Beds.) RESIDENT HOUSE SURGEON (Senior House Officer or Intern) required for the Gynæcological (30 Beds) and E.N.T. (16 Beds) Departments. Duties to commence 17th September, 1955. Salary in accordance with terms and conditions of National Health Service.

Applications, together with names and addresses of referees, to be sent to the Physician-Superintendent, St. Peter's Hospital, as soon as possible.

CHESTERFIELD HOSPITAL MANAGEMENT COMMITTEE. Whole-time NON-RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER required for Whittington Hall, Chesterfield (372 female mentally deficient patients), and Scarsdale Hospital, Chesterfield. Salary scale now £775–£50–£1075 p.a.

Apply M. H. BOONE, Secretary, at Chesterfield Royal Hospital.

CHEPSTOW, MONMOUTHSHIRE. PLASTIC SURGERY, JAW INJURIES AND BURNS CENTRE, ST. LAWRENCE HOSPITAL. (109 plastic surgery, 50 orthopædic beds.) SENIOR HOUSE OFFICER in Plastic Surgery required. Previous experience in specialty not essential. The Hospital intakes from most of Wales and the successful candidate will receive a thorough training. Second Senior House Officer in plastic surgery recently appointed and there is also a Senior House Officer in orthopædics, Senior Registrar non-resident, and 2 Registrars, all in plastic surgery, resident. Salary £745, less £150 board-residence.

Write, quoting 2 referees, to T. A. JONES, Group Secretary, 64, Cardiff-road, Newport, Mon.

COLCHESTER. ESSEX COUNTY HOSPITAL. (188 Beds.) Applications invited for post of SENIOR HOUSE OFFICER (anæsthetics). Post tenable for 1 year. Recognised for F.F.A.R.C.S. and D.A. The successful candidate will be called upon to give anæsthetics in other hospitals in the Group.

Applications, with copies of 3 testimonials, to Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

COLCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. BLACK NOTLEY HOSPITAL, BRAINTREE, AND ESSEX COUNTY HOSPITAL, COLCHESTER. Applications invited for post of HOUSE SURGEON (first, second, third, or pre-registration post); tenable for 6 months. Duties to include work in general surgical and gynæcological wards. Recognised for F.R.C.S.

Applications, with copies of 3 testimonials, to Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

COTTINGHAM. CASTLE HILL SANATORIUM. (221 Beds), AND RAYWELL SANATORIUM, near COTTINGHAM (48 Beds). SENIOR HOUSE OFFICER (or Locum Tenens) to work under supervision of Consultant Chest Physician in Group Sanatoria with Major Thoracic Surgery Unit and mass radiography and laboratory facilities.

Application forms from Group Secretary, Hull B Hospital Management Committee, De la Pole Hospital, Willerby, E. Yorkshire.

CHRISTCHURCH HOSPITAL, Christchurch, Hampshire. Locum MEDICAL REGISTRAR required 12th–29th September.

Applications to the Group Secretary, Royal Victoria Hospital, Gloucester-road, Boscombe, Bournemouth.

CROYDON. MAYDAY HOSPITAL. (618 Beds.) **Senior** HOUSE SURGEON (resident) for Fracture and Orthopædic Unit required immediately for 6 months in first instance.

Application forms obtainable from GEORGE A. PAINES, Group Secretary, Hospital Management Committee, General Hospital, London-road, Croydon, to be returned immediately.

CROYDON GENERAL HOSPITAL. (200 Beds.) **Casualty** OFFICER (Senior House Officer—resident) commencing 20th September. Post is recognised for Final F.R.C.S. examination.

Application forms obtainable from GEORGE A. PAINES, Secretary, Hospital Management Committee, General Hospital, Croydon, to be returned immediately.

CROYDON. ST. MARY'S MATERNITY HOSPITAL. (33 Beds.) SENIOR HOUSE OFFICER (resident). Post, which is recognised for D.Obst.R.C.O.G., vacant from 21st October, 1955. Previous obstetric experience desirable. Candidate required to undertake certain duties at Mayday Hospital.

Application forms obtainable from GEORGE A. PAINES, Group Secretary, Hospital Management Committee, General Hospital, Croydon.

DOUGLAS, I.O.M. NOBLE'S ISLE OF MAN HOSPITAL. (160 Beds.) Applications are invited for post of HOUSE PHYSICIAN at this busy Hospital, which has been approved for Pre-registration Service. The post, which becomes vacant 1st October, 1955, offers varied experience. 4 residents on the staff. Salary scale £425–£475–£525, according to experience.

Applications, stating full details, with copies of 2 recent testimonials, to the Secretary, Noble's Hospital, Douglas, Isle of Man.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP, BIRMINGHAM REGION.

The Corbett Hospital, Stourbridge (106 Beds)
SENIOR HOUSE OFFICER (casualty).

The Guest Hospital, Dudley (154 Beds)
SENIOR HOUSE OFFICER (casualty). Post recognised for F.R.C.S. examination.
SENIOR HOUSE OFFICER (anæsthetics). Post now vacant.
SENIOR HOUSE OFFICER (surgical). Post vacant September.

Wordsley Hospital, near Stourbridge (478 Beds)
SENIOR HOUSE OFFICER (anæsthetics). Resident. Previous experience house appointments essential. Experience available general surgery, gynæcology, orthopædics, plastic surgery unit.

Applications, stating age, experience, with copies of 3 recent testimonials, to Group Secretary, The Guest Hospital, Dudley, Worcs.

DOVERCOURT. HARWICH AND DISTRICT HOSPITAL. (30 Beds.) Applications invited for post of SENIOR HOUSE OFFICER. Duties mainly surgical, but there is a proportion of medical beds. In addition there are surgical, medical, E.N.T. outpatient and casualty work. Post tenable for 1 year.

Applications, with copies of 3 testimonials, to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

DRIFFIELD, YORKSHIRE. NORTHFIELD SANATORIUM. (78 Beds.) SENIOR HOUSE PHYSICIAN. Vacant early October. Offers experience all branches of tuberculosis within Group, including surgery, mass miniature radiography, and clinics. Time for study. Ex-patients welcome. £165 for full residence.

Applications to Group Secretary, Westwood Hospital, Beverley, Yorkshire.

DURHAM. COUNTY HOSPITAL. (116 Beds.) Resident HOUSE SURGEON required immediately in orthopædics and casualty. Post recognised for pre-registration purposes. This post offers facilities for good and varied experience in a busy Orthopædic and Accident Hospital which serves a wide mining and industrial area.

Apply, giving age, experience, and names of 2 referees, to the Group Secretary, Dryburn Hospital, Durham.

DURHAM. COUNTY HOSPITAL. (116 Beds.) Senior HOUSE OFFICER in Orthopædics required immediately. The County Hospital is the main Orthopædic and Accident Hospital in a busy mining and industrial area. Experience can be obtained in all branches of orthopædics.

Applications, with particulars of previous experience and names of 2 referees, to Group Secretary, Dryburn Hospital, Durham.

EAST ANGLIAN REGIONAL HOSPITAL BOARD.

(1) MEDICAL REGISTRAR, Papworth Hospital, Cambridgeshire. Duties in both Medical and Thoracic Surgical Departments. Post provides good experience in tuberculosis and other chest diseases. Appointment for 1 year, renewable for second year. Candidates invited to visit Hospital by direct arrangement with Physician-Superintendent.

(2) ORTHOPÆDIC REGISTRAR, Norfolk and Norwich Hospital (441 Beds). Post provides excellent training. Appointment for 1 year, renewable for second year. Candidates invited to visit Hospital by direct arrangement with Hospital Management Committee Secretary at the Hospital.

Applications, stating age, experience, and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 19th September, 1955.

EBBW VALE GENERAL HOSPITAL. (General beds 71, maternity 15.) Applications are invited for the following appointments :—

(*a*) JUNIOR HOSPITAL MEDICAL OFFICER.
(*b*) SENIOR HOUSE OFFICER.

The Hospital is an active Surgical Unit and the medical staff consists of a resident Surgeon and visiting orthopædic gynæcological, and ophthalmic Surgeons.

The tenure of appointment shall be for :—
(*a*) a period not exceeding 4 years ; and
(*b*) a period of 12 months.

Apply giving full details and references to Group Secretary, North Monmouthshire Hospital Management Committee, Nevill Hall Hospital, Abergavenny, Mon.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) RESIDENT OBSTETRIC HOUSE SURGEON. Post vacant 19th November, 1955. 6-month appointment. Post recognised for M.R.C.O.G. and pre-registration purposes.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 24th September, 1955.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT SURGICAL REGISTRAR required at above Hospital. Post vacant 7th October, 1955. Hospital may be visited by direct appointment with Medical Director.

Application forms obtainable from, and returnable to, Group Secretary, Edgware General Hospital, by 20th September, 1955.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) RESIDENT GYNÆCOLOGICAL HOUSE SURGEON. Post vacant 9th November, 1955. 6-month appointment. Post recognised for M.R.C.O.G. purposes.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 24th September, 1955.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) RESIDENT SENIOR CASUALTY HOUSE OFFICER required at above Hospital. Post vacant 7th October, 1955. Salary £745 p.a. Deduction of £155 p.a. for board, residence, &c.

Apply immediately, stating age, nationality, qualifications and experience, together with the names and addresses of 2 referees, to Group Secretary, Edgware General Hospital.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. ENFIELD GROUP HOSPITAL MANAGEMENT COMMITTEE. Appointment of RESIDENT HOUSE SURGEON (approved pre-registration post), vacant 25th October, 1955. General surgical duties. 6-month appointment.

Applications to the Secretary of the Management Committee as soon as possible.

EPPING. ST. MARGARET'S HOSPITAL. (495 Beds.) RESIDENT SENIOR HOUSE OFFICER (surgery), vacant 1st October, 1955. Post recognised for F.R.C.S. Busy general hospital with easy access to London. Salary on national scale, less deduction for board, lodging, &c.

Applications, with copies of 2 testimonials, to reach the Group Secretary, St. Margaret's Hospital, Epping, Essex, by 21st September, 1955.

EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom, SURREY. SENIOR HOUSE OFFICER (casualty) required 26th September. Post, normally non-resident, recognised for F.R.C.S. 12-month appointment. Busy Casualty and Outpatient Department with excellent experience in minor and traumatic surgery. Candidates should have held previous House Officer posts.

Applications, stating age, qualifications, experience, with copies of 2 recent testimonials, should be sent as soon as possible to Group Secretary at above address.

GLASGOW. HAWKHEAD (MENTAL) HOSPITAL, 510, Crookston-road, GLASGOW, S.W.3. Applications are invited for the post of SENIOR HOUSE OFFICER in Psychiatry (Male or Female), resident or non-resident. The post offers wide experience and training in all aspects of psychiatry (in-patient and outpatient), and all modern methods of treatment are carried out. Recognised for D.P.M.

Applications, together with the names of 2 referees, should be forwarded as soon as possible to Physician-Superintendent at above address.

GREENFORD. PERIVALE MATERNITY HOSPITAL. HOUSE OFFICER, vacant 27th September, 1955. Post recognised for Membership and Diploma in Obstetrics. Preference given to persons seeking second pre-registration post under Medical Act, 1950.

Applications, stating age, nationality, qualifications with dates, and details of experience, together with copies of 2 recent testimonials, to Group Secretary, South West Middlesex Hospital Management Committee, West Middlesex Hospital, Isleworth, Middlesex, by 20th September, 1955.

GREENOCK. RAVENSCRAIG (MENTAL AND GENERAL) HOSPITAL. (472 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER (resident post). Mental and general experience to be gained. Hospital is recognised as a training centre for the D.P.M. examination.

Applications, in writing, to the Physician-Superintendent as soon as possible.

GUILDFORD. ROYAL SURREY COUNTY HOSPITAL. (232 Beds.) CASUALTY OFFICER required. The post is recognised for the F.R.C.S. and the grading that of Senior House Officer. 2 Casualty Officers are employed who share the work of the department which is part of the Orthopædic and Traumatic Unit. Regular instruction is given in traumatic surgery and Casualty Officers take part in the work of fracture clinics. Post is vacant on 19th September.

Applications with copies of testimonials to the Hospital Secretary.

HAROLD WOOD HOSPITAL, Harold Wood, Essex (near London). (415 Beds.) SENIOR HOUSE OFFICER (anæsthetics), resident. Main general and casualty hospital in Group. Recognised for D.A. and F.F.A.R.C.S.

Apply, giving full details, to the Hospital Secretary (Tel. : Ingrebourne 2881).

HASTINGS AND ST. LEONARDS. BUCHANAN HOSPITAL. (94 Beds.) HOUSE SURGEON in Gynæcology required (28 gynæcological beds). Post, recognised for M.R.C.O.G., vacant 22nd October for 6 months. Candidates for Pre-registration Service (surgery) can be considered. National scale of salary.

Apply, with names of 3 referees, to Hospital Administrator.

HASTINGS GROUP HOSPITAL MANAGEMENT COMMITTEE. Locum SENIOR HOUSE OFFICER (anæsthetics) required pending permanent appointment. Post vacant 17th September. Salary £14 10s. per week.

Apply to Group Secretary, 11, Holmesdale-gardens, Hastings, as soon as possible.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) SENIOR HOUSE OFFICER (casualty and orthopædic) required. Post now vacant. National scale of salary.

Apply to Hospital Administrator.

HENLEY-ON-THAMES, OXFORDSHIRE. PEPPARD CHEST HOSPITAL. (236 Beds.) Applications are invited for post of JUNIOR HOSPITAL MEDICAL OFFICER (resident), vacant immediately. Salary and conditions of service as recommended by Ministry of Health. Deductions for residence, &c., £150 p.a. Further particulars from Physician-Superintendent at Hospital.

Applications, stating age, nationality, qualifications with dates, present post, with copies of recent testimonials to Acting Group Secretary, Reading and District Hospital Management Committee, 3, Craven-road, Reading.

HITCHIN, HERTFORDSHIRE. NORTH HERTS HOSPITAL. Applications are invited for the post of RESIDENT HOUSE SURGEON, vacant 18th October, 1955. Recognised as pre-registration post and for F.R.C.S.

Applications, stating age, nationality, qualifications, and experience, together with copies of 3 recent testimonials, to be sent to the Medical Administrator, Lister Hospital, Hitchin, as soon as possible.

HITCHIN, HERTFORDSHIRE. LISTER HOSPITAL. Applications are invited for the post of RESIDENT HOUSE SURGEON, vacant 6th October, 1955. Recognised as pre-registration post and for F.R.C.S.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent to the Medical Administrator as soon as possible.

HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.) Applications are invited from provisionally registered or registered medical practitioners for the post of HOUSE PHYSICIAN, to commence duties immediately. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.
Huddersfield Hospital Management Committee,
The Royal Infirmary, Huddersfield.

HULL. VICTORIA HOSPITAL FOR SICK CHILDREN, Park-street, HULL. Locum SENIOR HOUSE OFFICER required from 11th September to 9th October, 1955. Duties mainly in Casualty Department.

Applications should be sent to the Hospital Secretary, Hull A Group Hospital Management Committee, at the above address.

ILKLEY. MIDDLETON HOSPITAL. (430 Beds.) RESIDENT SENIOR HOUSE OFFICER (surgical) required for Major Thoracic Surgical Unit at the above Hospital, tenable from 16th October, 1955.

Applications, stating age, nationality, qualifications, and experience, to Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL. Heath ROAD WING. (270 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (Resident Anæsthetist), vacant 18th October, 1955. The post, which is normally of 1 years duration, is recognised for the D.A. and the F.F.A.R.C.S. examinations.

Applications, stating age, nationality, together with recent testimonials, to Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL. Anglesea ROAD WING. (356 Beds.) Applications are invited for the post of HOUSE SURGEON to the Fracture and Orthopædic Department, vacant from 1st October, 1955. Approved pre-registration post.

Applications, with copies of recent testimonials, to the Hospital Secretary.

IPSWICH. ST. HELEN'S HOSPITAL. (100 Beds for infectious diseases, pulmonary tuberculosis and long-stay orthopædics. The Area Chest Clinic is in the Hospital.) HOUSE PHYSICIAN required (post-registration appointment). Accommodation available for married man.

Applications to JOHN WILLIAMS, Group Secretary, Ipswich Group Hospital Management Committee, at the Ipswich and East Suffolk Hospital (Anglesea Road Wing), Ipswich.

KETTERING AND DISTRICT HOSPITAL MANAGE-MENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER in Anæsthetics, vacant 1st October, 1955, recognised for D.A.

Applications, giving details of qualifications and enclosing copies of recent testimonials to be sent to the Secretary, General Hospital, Kettering.

KIDDERMINSTER AND DISTRICT GENERAL HOS-PITAL. (112 Beds.) HOUSE SURGEON (not pre-registration) required at the above Hospital.

Applications (in writing), with the names of 3 referees, to the Hospital Secretary.

LEEDS A GROUP HOSPITAL MANAGEMENT COM-MITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER (anæsthetics) for duties mainly at St. James's Hospital, vacant 1st October, 1955. The appointment which is recognised for the D.A. and the F.F.A. R.C.S., will be for a period of 1 year, and the salary will be in accordance with the agreed terms and conditions of service of hospital medical and dental staffs—namely, £745 p.a., with an appropriate deduction in respect of board, lodging, and other services provided.

Applications, stating age, qualifications, experience, &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOLKARD, Secretary to the Committee.

Administrative Offices, St. James's Hospital, Leeds, 9.

LEEDS, 2. PUBLIC DISPENSARY AND HOSPITAL. LEEDS A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of CASUALTY OFFICER (Senior House Officer) at the above Hospital. The appointment, which is recognised by the Royal College of Surgeons for Fellowship, will be for a period of 1 year. Salary in accordance with the agreed terms and conditions of service of hospital medical and dental staffs, with an appropriate deduction in respect of board, lodging, &c.

Applications, stating age, qualifications, experience, &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOLKARD, Secretary to the Committee.

Administrative Offices, St. James's Hospital, Leeds, 9.

LEEDS, 9. ST. JAMES'S HOSPITAL. Applications are invited from registered medical practitioners (Male and Female) for the appointment of SENIOR HOUSE OFFICER (psychiatry), vacant 1st November, 1955. The department consists of emergency admission wards and units for the treatment of early psychotic and neurotic cases. There is a large outpatient commitment. The Unit is recognised as affording suitable training for the D.P.M. examination and facilities will be provided for attendance at courses for this examination at Leeds University. The appointment will be for a period of 1 year and the salary will be in accordance with the agreed terms and conditions of service of hospital medical and dental staffs—namely, £745 p.a., with an appropriate deduction in respect of board, lodgings, and other services provided.

Applications, stating age, qualifications, experience, &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOLKARD, Secretary to the Committee,
Leeds A Group Hospital Management Committee.

Administrative Offices, St. James's Hospital, Leeds, 9.

LEEDS. THE UNITED LEEDS HOSPITALS. Applications are invited for the post of SENIOR HOUSE OFFICER to the Professorial Department of Psychiatry attached to this Teaching Hospital. The post is non-resident and will be of 1 years duration.

Applications, stating age, qualifications, and previous posts, with dates, and 3 names for reference, should be forwarded to the Secretary to the Board, General Infirmary, Leeds, 1, not later than 26th September, 1955.

LEEDS REGIONAL HOSPITAL BOARD. Senior Regis-TRAR vacancies.

Anæsthetics

(*a*) Hull A Group of hospitals with additional duties as required in Hull B and East Riding Groups. Non-resident.

(*b*) St. James's Hospital, Leeds, with additional duties at hospitals in the Leeds A and B Groups. Non-resident.

Ophthalmology

Hull A Group, with additional duties as required in Hull B and East Riding Groups. (34 eye beds—3000 new and 12,500 total outpatients p.a.) Non-resident.

Pathology

(*a*) St. James's Hospital, Leeds (1800 Beds), and at other units in the Leeds A and B Groups and the Regional Blood Transfusion Centre. Experience of morbid anatomy essential. The work would be so arranged that some time could be devoted to research problems.

(*b*) Regional Blood Transfusion Centre, Seacroft, with minor relief duties in general pathology at St. James's Hospital, Leeds. 52,000 pints of blood taken annually. Previous experience in all branches of pathology desirable. Non-resident.

Psychiatry

(*a*) 5 sessions as Trainee Specialist in Child Psychiatry at the University Department of Psychiatry at the General Infirmary at Leeds and the remainder of the time in mental deficiency at the Westwood Hospital, Bradford, and associated colonies. Accommodation available for a single person. May be non-resident, in which case the person appointed should reside in Bradford. Candidates must hold the D.P.M., or equivalent qualification.

(*b*) Stanley Royd Hospital, Wakefield (2000 Beds), and associated clinics. Accommodation for a single person is available. It is anticipated that the successful candidate will undertake 2 clinical sessions (which may include research) in association with the Department of Psychiatry of the University of Leeds. Candidates must hold the D.P.M. or equivalent qualification.

Applications, stating age, qualifications and details of appointments held, showing dates, with names and addresses of 3 referees, to the Deputy Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 16th September, 1955.

LEEDS REGIONAL HOSPITAL BOARD. Registrar vacancies.

General Medicine

Bradford A Group. Resident. Duties mainly at Bradford Royal Infirmary (110 general medical beds).

General Surgery

(*a*) Leeds A Group. Resident Surgical Officer, St. James's Hospital, Leeds (140 general surgical beds).

(*b*) Dewsbury, Batley and Mirfield Group (135 general surgical beds). Resident.

Obstetrics and Gynæcology

Wakefield A and B Groups (with occasional duties in Pontefract and Goole Groups). Non-resident. Offers good experience but is not at present recognised by the R.C.O.G. for membership purposes. (Aggregate of 120 obstetric and 50 gynæcological beds.)

Psychiatry

Menston Hospital, near Leeds (2500 Beds). Resident. If desired, facilities for attendance at the Leeds University will be provided if the successful candidate is studying for the D.P.M.

Thoracic Surgery

Duties at the Thoracic Surgical Units at the Bradford Royal Infirmary and The Hospital, Middleton. (Aggregate of 65 beds for both non-tuberculous and tuberculous cases.) Non-resident.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with the names and addresses of 3 referees, to the Deputy Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 22nd September, 1955.

LINCOLN. BRACEBRIDGE HEATH HOSPITAL. (For Mental Diseases—1290 Beds.) Applications are invited for the appointment of a permanent or Locum Tenens JUNIOR HOSPITAL MEDICAL OFFICER (resident or non-resident), Male or Female (married or single). Salary and terms of service as laid down by the Ministry of Health. There is residential accommodation for a single or married officer. There will be scope for learning the use of modern psychiatric methods in the wards. Previous psychiatric experience is not essential. The appointment is subject to the provisions of the National Health Service superannuation regulations.

Applications, with names of 2 referees, should be forwarded as soon as possible to the Medical Superintendent, Bracebridge Heath Hospital, near Lincoln.

LINCOLN COUNTY HOSPITAL. (200 Beds. Recognised for training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time Male or Female RESIDENT SURGICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 19th September, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for a post of SENIOR REGISTRAR in Pathology for the period ending 30th September, 1956. Annual reappointment thereafter until completion of the normal period of training will be considered without need for further application.

Apply by 24th September, 1955, on form obtainable from the Secretary, 80, Rodney-street, Liverpool, 1.

LLANELLY HOSPITAL, Llanelly, Carmarthenshire. (164 Beds.) GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER in the Gynæcological Department, with duties in the E.N.T. and Ophthalmic Departments.

Full particulars, stating age, qualifications and experience, should be addressed to the Hospital Secretary.

LLANELLY HOSPITAL, Llanelly, Carmarthenshire. GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER for work in the Surgical Unit of 75 Beds. The post offers excellent experience in general surgery and the Hospital is recognised under the F.R.C.S. regulations. The successful candidate will also be expected to participate in the general work of the Hospital.

Full particulars, stating age, experience and qualifications, together with copies of 2 recent testimonials, should be forwarded to the Hospital Secretary.

LLANELLY HOSPITAL, Llanelly, Carmarthenshire. GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER in the Casualty Department of the above Hospital.

Full particulars, stating age, experience and qualifications, together with copies of 2 recent testimonials, should be forwarded to the Hospital Secretary.

LOUTH, LINCOLNSHIRE. COUNTY INFIRMARY. (215 Beds.) GRIMSBY HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (orthopædic and casualty) now vacant at this General Hospital.

Applications, giving full details, together with the names of 2 referees, should be addressed to the Hospital Secretary.

LUTON AND DUNSTABLE HOSPITAL. (250 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR (resident) required at above Hospital and associated units (134 Beds). Post vacant 25th September, 1955, and recognised for D.A. The Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Luton and Hitchin Group Hospital Management Committee, St. Mary's Hospital, Luton, Beds, by 20th September, 1955.

LUTON AND HITCHIN GROUP OF HOSPITALS. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. PÆDIATRIC REGISTRAR (resident or non-resident) required for the above Group of hospitals. Post vacant 9th November, 1955. Principal duties will be at the Children's annexe of Luton and Dunstable Hospital (56 Beds) and the Maternity Units in Luton but there are duties at other hospitals in the Group. The hospitals may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Luton and Hitchin Group Hospital Management Committee, St. Mary's Hospital, Luton, Beds, by 24th September, 1955.

MAIDENHEAD HOSPITAL, St. Luke's-road, Maidenhead. Applications invited from registered practitioners for the post of CASUALTY OFFICER, vacant now. Post recognised for F.R.C.S. Salary on House Officer scale, plus £50 p.a.

Applications, stating age, qualifications, and nationality with copies of testimonials or names of 3 referees, to Hospital Secretary.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RECEIVING ROOM OFFICER. Salary £745 a year, with a deduction of £150 a year for residential emoluments.

Applications to the Administrative Officer at the Hospital as soon as possible.

MARGATE. ROYAL SEA BATHING HOSPITAL. (Surgical Tuberculosis and Orthopædics, 241 Beds.) SENIOR HOUSE OFFICER. This post, now vacant, is largely an orthopædic one, and affords experience in the treatment of tuberculous and non-tuberculous orthopædic conditions. There is also a genito-urinary unit of 35 beds and a small number of beds for other tuberculous conditions. The post is suitable for someone reading for a higher surgical examination. Salary £745 p.a., less £150 for residential emoluments.

Applications, with copies of testimonials, to be sent to the Hospital Secretary.

MANCHESTER, 8. CRUMPSALL HOSPITAL. (1225 Beds.) NORTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER to the Psychiatric Department at the above General Hospital. This Department offers experience in all branches of psychiatric illness, including all modern methods of treatment. Facilities available for candidates taking Diploma in Psychiatric Medicine. Experience not essential.

Applications, with names of 2 referees, by 20th September to Group Secretary, Crumpsall Hospital, Manchester, 8.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of REGISTRAR in Chest Diseases to the Wigan and Leigh and Wrightington Groups of hospitals. 2 busy chest clinics and opportunity to gain experience in Thoracic Surgical Unit.

Applications, together with the names of 2 referees, to the Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan, as soon as possible.

MANCHESTER VICTORIA MEMORIAL JEWISH HOSPITAL. (Non-sectarian—104 Beds.) Applications are invited for the resident post of SENIOR HOUSE OFFICER in Surgery to act as Deputy Resident Surgical Officer. Vacant 11th September. Recognised for F.R.C.S.

Applications immediately, with full details and names of 2 referees, to Group Secretary, North Manchester Hospital Management Committee, Crumpsall Hospital, Manchester, 8.

MANCHESTER VICTORIA MEMORIAL JEWISH HOSPITAL. (Non-sectarian—104 Beds.) Applications are invited for the resident post of SENIOR HOUSE OFFICER in Medicine at the above Hospital.

Applications, with names of 2 referees, immediately to Group Secretary, North Manchester Hospital Management Committee, Crumpsall Hospital, Manchester, 8.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for SENIOR HOUSE OFFICER post. Salary £745 p.a., less £155 p.a. for residential emoluments.

Application forms may be obtained from the undersigned.

H. R. NORTH, General Superintendent.

MANCHESTER. CHRISTIE HOSPITAL AND HOLT RADIUM INSTITUTE. MANCHESTER REGIONAL HOSPITAL BOARD. SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of REGISTRAR in Radiotherapy at the above Hospital. Candidates must hold either the Diploma in Radiotherapy or an F.R.C.S. or M.R.C.P. If the latter they would be eligible for Diploma in Radiotherapy course commencing in April, 1956.

Applications, with full details, to be forwarded to the Group Secretary, Withington Hospital, Manchester, 20, immediately.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. PARK HOSPITAL, DAVYHULME. (General Hospital—433 Beds.)

1 SENIOR HOUSE OFFICER (general surgery) required, vacant mid-November.

2 HOUSE OFFICERS (general surgery) required, pre-registration. Post recognised for F.R.C.S. examination, vacant October.

1 HOUSE OFFICER (general medicine), pre-registration, vacant mid-October.

1 HOUSE OFFICER (obstetrics), pre-registration. Post recognised for M.R.C.O.G. examination, vacant end-October.

1 HOUSE OFFICER (pædiatrics), post-registration for new post commencing 1st November, 1955. The Hospital has a Midwifery Unit of 73 beds and there are also thoracic surgery beds on the Pædiatric Unit. Hospital recognised for training for Diploma in Child Health.

Forms from Secretary.

MIDDLESBROUGH. POOLE HOSPITAL, Nunthorpe, MIDDLESBROUGH. (Tuberculosis—324 Beds.) Applications are invited for the appointment of RESIDENT MEDICAL OFFICER for general duties on medical and surgical wards (adults and children) at the above modern Hospital for a period to be agreed. Salary appropriate to grade of Junior Hospital Medical Officer, viz. £775–£50–£1075 p.a. There also exists a vacancy for a HOUSE PHYSICIAN. Salary and conditions of service in accordance with Ministry of Health regulations.

Applications, stating age, nationality, qualifications and previous experience, and names of 3 referees, to be sent immediately to the Group Secretary, Cleveland Hospital Management Committee, West Lane Hospital, Middlesbrough.

NEWCASTLE UPON TYNE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited for the whole-time non-resident post of SURGICAL REGISTRAR at the Royal Victoria Infirmary. The appointment will be for 1 year in the first instance and subject to the terms and conditions of service of hospital medical staff.

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.
Royal Victoria Infirmary, Newcastle upon Tyne.

NEWMARKET GENERAL HOSPITAL. East Anglian REGIONAL HOSPITAL BOARD. REGISTRAR in Medicine. Post provides good experience in general medicine and diseases of the chest. Previous experience in tuberculosis desirable. Appointment for 1 year, renewable for second year.

Applications, stating age, experience, and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 26th September, 1955. Candidates invited to visit Hospital by direct arrangement with Physician-Superintendent.

NEWMARKET GENERAL HOSPITAL, Newmarket. Applications are invited for the post of HOUSE PHYSICIAN, vacant 19th September, 1955. Duties include house charge of general medical and pulmonary tuberculosis beds. The post is recognised for pre-registration, is resident and tenable for 6 months. Salary in accordance with national scale.

Applications, together with 3 recent testimonials, to Physician-Superintendent.

NEWPORT, MONMOUTHSHIRE. ROYAL GWENT HOSPITAL. (260 Beds. 10 residents. Recognised D.L.O.) JUNIOR HOSPITAL MEDICAL OFFICER (E.N.T. and ophthalmic) required. Post covers 23 E.N.T. and 8 ophthalmic beds. Salary £775–£50–£1075, less £125 for board-residence. Good experience.

Apply, quoting 2 referees, to T. A. JONES, Group Secretary. 64, Cardiff-road, Newport, Mon.

NOTTINGHAM GENERAL HOSPITAL. Resident House SURGEON (pre-registration first or second post) required; duties to commence on 13th September. Recognised for F.R.C.S.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to the Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER (casualty). Establishment 3. Recognised for the F.R.C.S. Duties to commence 15th October. Post offers wide experience of casualty work.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Secretary, General Hospital, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners for the post of SENIOR ORTHOPÆDIC AND FRACTURE HOUSE OFFICER, duties to commence at an early date. The post offers exceptional experience in traumatic surgery. Salary and conditions of service in accordance with Ministry Regulations.

Applications, stating age, qualifications and experience, nationality, &c., together with copies of testimonials, to be sent to the Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. (420 Beds. Post recognised for the F.R.C.S. 51 E.N.T. beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT REGISTRAR in E.N.T. Surgery. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 19th September, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

NORTHAMPTON GENERAL HOSPITAL. (485 Beds.) Vacancies exist 1st October, 1955, for the following :—

SENIOR HOUSE OFFICER (Department of Pathology).

SENIOR HOUSE OFFICER (Casualty Department). Recognised for F.R.C.S.

HOUSE OFFICER (Casualty Department). Recognised for F.R.C.S. and for pre-registration.

HOUSE OFFICER (general surgery). Recognised for F.R.C.S. and for pre-registration.

All 6-month appointments in the first instance. Deduction £125 a year for residential emoluments.

Names of 2 referees should accompany applications for post of Senior House Officer Pathology and copies of 3 recent testimonials for other posts.

Applications to S. G. HILL, Superintendent.

NEWARK HOSPITAL, Newark. (82 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time RESIDENT SURGICAL OFFICER with general duties required at Registrar rate of pay. Post becomes vacant 1st October, 1955. This post offers good experience to anyone preparing to enter General Practice. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 19th September, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

OXFORD REGIONAL HOSPITAL BOARD. Registrar to the Warneford and Park Hospitals, Oxford. The Warneford Hospital (140 Beds) is being developed as an acute psychiatric unit. A research programme is being undertaken and post-graduate training is emphasised. The Park Hospital is an associated Neurosis Centre (30 Beds) with daily outpatient clinics, including children. Full training facilities including neurology, child guidance, and mental deficiency are available for D.P.M. purposes. Candidates should preferably be young graduates starting the specialist study of psychiatry. Accommodation for single person available.

Applications, on forms obtained from the Secretary, Registrar Committee, 43, Banbury-road, Oxford, should reach him by 30th September.

PETERBOROUGH. THE MEMORIAL HOSPITAL. PETERBOROUGH AND STAMFORD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the position of HOUSE SURGEON, vacant now.

Applications, with testimonials, should be addressed to the Secretary, Memorial Hospital, Peterborough.

PONTEFRACT GENERAL INFIRMARY. House Surgeon required immediately. This is an approved pre-registration post under Medical Act, 1950, but applications will be considered from fully registered practitioners. Hospital approved under F.R.C.S. regulations, and provides excellent surgical experience. Married accommodation available.

Apply at once to Secretary, Pontefract and Castleford Hospital Management Committee, Great Northern House, Salter-row, Pontefract, Yorks.

POOLE GENERAL HOSPITAL, Poole, Dorset. Bourne-MOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. CASUALTY OFFICER (Senior House Officer) required for 12 months from 1st October, 1955. Post suitable for persons reading for higher diplomas.

Applications to the Hospital Secretary.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE.

Royal Portsmouth Hospital (104 orthopædic and 70 surgical beds)

SENIOR HOUSE OFFICER (Orthopædic Department), vacant now.

HOUSE OFFICER (orthopædic), vacant now.

Applications, stating age, experience and qualifications, together with names of 2 referees, should be forwarded as soon as possible to L. C. ROGERS.

35, Grove-road South, Southsea.

RHYMNEY AND SIRHOWY VALLEYS HOSPITAL MANAGEMENT COMMITTEE.

HOUSE SURGEONS (pre-registration candidates if available) required (1 immediately and the other on 24th October) at Caerphilly District Hospital, near Cardiff (170 Beds—general surgery and medicine, orthopædic, gynæcology, ophthalmology, obstetrics, E.N.T.). Salary £425–£525, plus £50 special allowance. Married quarters available 24th October.

HOUSE PHYSICIAN (pre-registration candidate if available) required in October at St. James Hospital, Tredegar, Mon. (near Cardiff and Newport). 160 Beds for acute medicine, obstetrics and geriatrics. Married quarters available.

Apply, stating age, qualifications, &c., and the names of 2 referees, to the Group Secretary, Rhymney and Sirhowy Valleys Hospital Management Committee, Central Offices, Caerphilly-road, Ystrad Mynach.

ROCHDALE INFIRMARY. Whole-time Locum Surgical REGISTRAR (Resident Surgical Officer) required at once for approximately 2 months. Salary £17 10s. per week.

Apply immediately to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs.

ROCHFORD, ESSEX. GENERAL HOSPITAL. Required, Locum OBSTETRIC AND GYNÆCOLOGICAL REGISTRAR, commencing 16th September for a period in the first instance of 2 weeks.

Applications immediately to J. C. FIELD, Secretary.

ROCHFORD, ESSEX. GENERAL HOSPITAL. Required immediately, Locum REGISTRAR in the Psychiatric and Geriatric Units for a period up to 30th September, 1955.

Apply immediately to J. C. FIELD, Secretary.

ROCHFORD, ESSEX. GENERAL HOSPITAL. Locum SENIOR HOUSE OFFICER to the Obstetric and Gynæcological Unit required from 16th to 30th September, 1955.

Apply immediately to J. C. FIELD, Secretary.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) ORTHOPÆDIC HOUSE SURGEON (resident) required immediately in the Orthopædic and Accident Unit. The service consists of 100 beds equally divided between traumatic surgery and "cold" orthopædics. Post is recognised for pre-registration purposes and for F.R.C.S.

Applications to be sent to Group Secretary, Romford Hospital Management Committee, Oldchurch Hospital, as soon as possible.

ROMFORD, ESSEX. VICTORIA HOSPITAL. (99 Beds.) Temporary SURGICAL REGISTRAR (Male) required. Post vacant from 13th September, 1955.

Applications should be forwarded to Secretary, Romford Group Hospital Management Committee, at Oldchurch Hospital, Romford, as early as possible.

READING AREA HOSPITALS. Applications are invited for the post of SENIOR HOUSE OFFICER (pathology). Previous experience in pathology desirable, but not essential. Salary £745 p.a., less £125 for board-residence.

Apply, stating age, qualifications with dates, nationality, present post, together with names of 3 referees, to Acting Group Secretary, 3, Craven-road, Reading.

READING. BATTLE HOSPITAL. (374 Beds.) Applica-tions are invited from registered and provisionally registered medical practitioners for post of RESIDENT JUNIOR HOUSE SURGEON in the Area Accident and Orthopædic Department, vacant 1st October, 1955. F.R.C.S. recognised. Also casualty duties. Salary £425–£525 p.a., less £125 board-residence.

Apply, stating age, qualifications with dates, nationality, present position, with copy of 1 recent testimonial, to Hospital Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. (401 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the resident post of JUNIOR HOUSE SURGEON (gynæcology), vacant 1st October, 1955, for 6 months. Recognised for D.Obst.R.C.O.G.

Write, stating age, qualifications with dates, nationality and present post, with copy of recent testimonial, to Secretary.

REDHILL, SURREY. EAST SURREY HOSPITAL, Shrewsbury-road. (139 Beds.) REDHILL GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON, pre-registration appointment.

Apply to Hospital Secretary at above address, quoting 2 referees.

REDHILL COUNTY HOSPITAL, Earlswood Common, REDHILL, SURREY. Locum REGISTRAR (obstetrics and gynæcology), required 18th September–1st October, 1955. Resident appointment.

Apply to Group Secretary, Redhill Hospital Management Committee, Earlswood Mount, Redhill (Redhill 3581, Ext. 20).

SALISBURY GENERAL HOSPITAL. Applications are invited for the appointment of RESIDENT HOUSE SURGEON/OBSTETRIC AND GYNÆCOLOGICAL HOUSE SURGEON (recognised by R.C.O.G.) to run consecutively in this order from 2nd November, 1955, for a period of 6 months in each post. The posts are open to pre-registration candidates.

Apply, enclosing 2 recent references, to Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury.

SCOTLAND. SOUTH-EASTERN REGIONAL HOS-PITAL BOARD. Applications are invited for the appointment of MEDICAL REGISTRAR to a Teaching Unit in the Western General Hospital (Edinburgh Northern Hospital Group).

Applications, giving particulars of age, qualifications and previous experience, together with the names of 2 referees, should be sent to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, by 30th September, 1955.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SENIOR HOUSE OFFICER in Surgery at Western District Hospital, Glasgow.

Applications, stating age, qualifications, experience, and present appointment, and naming 3 referees, to be lodged with the Secretary, Board of Management for Glasgow Northern Hospitals, 13, Woodside-place, Glasgow, C.3, by 21st September 1955.

SHREWSBURY. ROYAL SALOP INFIRMARY. (241 Beds.) ORTHOPÆDIC/ACCIDENT HOUSE SURGEON (Senior House Officer). Successful applicant will be allowed to attend for 2 days a month at the Robert Jones and Agnes Hunt Orthopædic Hospital, Oswestry, for postgraduate study, with the Consultant. Post recognised under revised Fellowship regulations in respect of 6 months training required for the Final Fellowship examination.

Applications, with copy testimonials, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time SENIOR REGISTRAR in Psychiatry required for the Pastures Hospital, Mickleover, near Derby. D.P.M. essential. House available. Appointment for 1 year in the first instance, reviewable annually. Opportunity for research and experience in those special branches of psychiatry available in the Hospital area.

Application forms and details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, 10. Forms to be returned by 19th September, 1955.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. ROYAL HOSPITAL UNIT. SENIOR REGISTRAR in Orthopædics required at the above Hospital. Non-resident. Fellowship of 1 of the Royal Colleges of Surgeons essential.

Applications, stating age, qualifications and experience, with names of 3 referees, to be sent to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1, by 24th September, 1955.

SKIPTON (near). GRASSINGTON HOSPITAL. Application invited for RESIDENT MEDICAL OFFICER at the above Hospital. Appointment is that of Senior House Officer or Junior Hospital Medical Officer, according to experience. The Hospital caters for tuberculous patients, men and women. This is a repeat advert., previous applicants need not re-apply.

Apply to Medical Superintendent.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. WINDSOR GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (casualty) required, 1 of 2, for busy Casualty Department. Experience provided in orthopædic and plastic cases.

Applications, stating age and qualifications together with copies of 2 testimonials, to Hospital Secretary.

SOUTHAMPTON CHEST HOSPITAL. South West METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of Whole-time REGISTRAR in Anæsthetics to the Thoracic Surgical Unit, based on the above Hospital, becoming vacant in October, 1955. This Unit deals with all types of thoracic surgical cases. Candidates are invited to visit the Unit, if they so desire, by prior arrangement, with the Hospital.

Forms of application may be obtained from the undersigned to whom they should be returned not later than 20th September, 1955. FRANK JENNINGS, Group Secretary,

Southampton Group Hospital Management Committee.

Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL (278 Beds) AND SOUTHAMPTON GENERAL HOSPITAL (471 Beds). SENIOR HOUSE OFFICER (E.N.T.) required from 4th September. This post is recognised for the F.R.C.S. (Eng.) and D.L.O. examinations and provides experience in all branches of E.N.T. work, including audiometry. The Group includes a diagnostic and distributing hearing-aid centre.

Applications, with copies of recent testimonials, should be forwarded as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds.) CASUALTY OFFICER (Senior House Officer), orthopædic, required for the above Hospital (Orthopædic Unit 74 Beds) immediately. This Hospital is the centre to which all trauma from a large industrial town and port is directed, thus providing excellent experience in the treatment of traumatic conditions.

Applications, with copies of testimonials, to be submitted as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHPORT PROMENADE HOSPITAL. Resident SENIOR HOUSE OFFICER. Duties of mainly orthopædic and E.N.T. nature.

Apply, stating age, qualifications, nationality, with copies of 2 testimonials, to Group Secretary, Southport and District Hospital Management Committee, Promenade Hospital, Southport.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for a whole-time appointment as RESIDENT SURGICAL OFFICER to fill a vacancy in the approved establishment at the Sidcup and Swanley Group of hospitals. The successful candidate will be required to reside at Queen Mary's Hospital, Sidcup. Married quarters are available. The salary will be £965 p.a. and the appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales) and will be for 1 year in the first instance, renewable for a further year.

Applications, giving particulars of age, qualifications, and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 24th September, 1955.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REDHILL AND CROYDON GROUP HOSPITAL MANAGEMENT COMMITTEES. REGISTRAR in Chest Medicine. Assistant to Consultant Chest Physician in Redhill and Purley Chest Clinic areas with combined population of 205,700 and combined register of 1000. The work includes clinic and hospital duties (49 Beds) and also preventive work under Local Authority schemes. Applicants may visit Redhill clinic by arrangement with Consultant.

Apply to Group Secretary, Redhill Group Hospital Management Committee, Earlswood Mount, Pendleton-road Redhill, Surrey.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. WEST DORSET GROUP HOSPITAL MANAGEMENT COMMITTEE. PATHOLOGICAL REGISTRAR (preferably resident) required. General laboratory and emergency duties with training in all branches. Some laboratory experience essential. Salary on Registrar grade, less £160 p.a. if resident. Candidates may visit the Laboratory by appointment.

Application form, to be returned by 17th September, 1955, from Group Secretary, West Dorset Hospital Management Committee, Damers-road, Dorchester, Dorset.

SUTTON AND CHEAM HOSPITAL, Cotswold-road, SUTTON, SURREY. Locum Whole-time SURGICAL REGISTRAR required for 3 weeks from 15th September.

Applications, stating age, qualifications, and experience, with the names of referees, to the Group Secretary, St. Helier Hospital, Carshalton, Surrey.

ST. ALBANS CITY HOSPITAL, Normandy-road, St. ALBANS, HERTFORDSHIRE. Locum Tenens CASUALTY OFFICER (Registrar grade) required immediately.

Applications to Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans.

ST. HELENS HOSPITAL. (196 Beds.) St. Helens and DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of CASUALTY OFFICER in the Senior House Officer grade, at above Hospital. The post is approved for the 6 months training in casualty work required of candidates for the Fellowship examination of the Royal College of Surgeons.

Applications, stating age, qualifications and experience, and giving 2 names for reference, should be forwarded immediately to N. RICHARDS, Secretary.

Group Office, Whiston Hospital, Prescot.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. HOUSE OFFICER (medical) required. Post vacant October. Recognised pre-registration.

Applications to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent, as soon as possible.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. HOUSE OFFICER (general surgery) required, vacant mid-September, 1955. Recognised F.R.C.S. and pre-registration.

Applications to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. (845 Beds.) REGISTRAR in Psychiatry. Department comprises mental observation ward (500 admissions a year), 150 beds for chronic psychotics and mental defectives. Opportunity to study all aspects of adult psychiatry. Outpatient Department (3 sessions weekly), including E.C.T. Recognised D.P.M.

Application forms from Hospital Management Committee Secretary to be returned before 26th September. Candidates may visit Hospital.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. (845 Beds—Recognised for F.F.A.R.C.S. and D.A.) STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER in Anæsthetics. Previous anæsthetic experience desirable, but not essential. The post offers experience in anæsthesia for all types of general surgery, thoracic, and cardiac surgery, including an Obstetric Unit of 60 Beds. Staff includes a Senior Registrar, who shares in emergency duties.

Applications, with necessary details and copy testimonials, to the Group Secretary, Stoke-on-Trent Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. HOUSE OFFICER (general surgery), vacant shortly. Recognised F.R.C.S. and pre-registration.

Applications to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. (455 Beds.) SENIOR HOUSE OFFICER (ophthalmology) required. Recognised F.R.C.S. and D.O.

Applications to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. STANFIELD SANATORIUM. (71 Beds—Tuberculosis.) JUNIOR HOSPITAL MEDICAL OFFICER required. Post vacant 30th September—Resident.

Applications to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

SULLY HOSPITAL, Sully, Penarth, Glamorganshire. SENIOR HOUSE OFFICER (surgical) required at above Hospital; Thoracic Centre for South Wales. Experience available in investigation and treatment of all lung and heart diseases in adults and children.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

SWANSEA HOSPITAL, Swansea. (407 Beds.) Glantawe HOSPITAL MANAGEMENT COMMITTEE. Registered medical practitioners are invited to apply for the resident appointment of SENIOR HOUSE OFFICER in the Traumatic and Orthopædic Department of the above Hospital. Vacant immediately. The post is recognised under the F.R.C.S. regulations for 6 months casualty training. It offers exceptional experience in all aspects of traumatic surgery as occuring in a large industrial centre and port.

Applications, stating age and experience, together with copies of 2 recent testimonials, should be forwarded to the Hospital Secretary.

SWANSEA HOSPITAL, Swansea. (407 Beds.) Glantawe HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the locum appointment for the period 19th–24th September, of JUNIOR HOSPITAL MEDICAL OFFICER in the Casualty Department of the above Hospital.

Applications, with full particulars, should be addressed to the Hospital Secretary.

SWINDON HOSPITAL GROUP. (507 Beds.) Applications are invited for the appointment of RESIDENT SENIOR HOUSE OFFICER as Casualty Officer and Orthopædic House Surgeon at Great Western Hospital, Swindon. Post recognised by R.C.S. for 6 months of years training under Fellowship regulations. Work of Accident and Orthopædic Department, associated with Wingfield-Morris Orthopædic Hospital, Oxford, includes large number of industrial injuries. Salary £745 p.a. less £145 p.a. for residential emoluments.

Full details and names of 3 referees, to Secretary, 7, Okus-road, Swindon, as soon as possible.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. HOUSE PHYSICIAN required to Special Unit for research in juvenile rheumatism, vacant 10th October. Post offers scope for those interested in research, pædiatrics, rheumatology or cardiology.

Applications, stating age, qualifications and experience, with copies of 2 testimonials, to Hospital Secretary.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. HOUSE PHYSICIAN required for post vacant 11th October. Preference given to persons seeking pre-registration post.

Applications, stating age, experience, and qualifications with dates, with copies of 2 testimonials, to Hospital Secretary.

TORQUAY. TORBAY HOSPITAL. Senior Resident HOUSE OFFICER (medicine) required 18th October, 1955. There is a complement of 5 Resident House Officers.

Applications, stating qualifications, age, nationality, with copies of testimonials (quoting Ref. F.955/61), to the Group Secretary, Torquay District Hospital Management Committee, Torbay Hospital, Torquay, S. Devon.

WAKEFIELD. THE GENERAL HOSPITAL, Park Lodge-lane, WAKEFIELD. (158 Beds.) RESIDENT SURGICAL OFFICER (Senior House Officer grade) required at the above Hospital. Post vacant from 1st November, 1955. Salary and conditions of service in accordance with national recommendations.

Application should be made to the Group Secretary, Hospital Management Committee No. 9 Wakefield A Group, 113, Northgate, Wakefield.

WARRINGTON GENERAL HOSPITAL. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (Male or Female), obstetrics and gynæcology, which is now vacant. This post is recognised for the D.Obst.R.C.O.G. Scale of salary £745 p.a., less £130 for residential emoluments.

Applications, stating age, qualifications with dates, and details of experience, together with copies of recent testimonials, should be sent to the Group Secretary, Warrington and District Hospital Management Committee, c/o General Hospital, Warrington, Lancs.

WEST BROMWICH AND DISTRICT GENERAL HOSPITAL. (144 Beds.) HOUSE SURGEON (pre-registration) vacant 1st October, 1955.

Applications, with 3 recent testimonials, to Group Secretary, West Bromwich and District Hospital Management Committee, Edward-street, West Bromwich.

WEST BROMWICH AND DISTRICT GENERAL HOSPITAL. (144 Beds.) HOUSE PHYSICIAN, vacant 1st October, 1955. Pre-registration.

Applications, with 3 recent testimonials, to Group Secretary, West Bromwich and District Hospital Management Committee, Edward-street, West Bromwich.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (311 Beds.) SENIOR HOUSE OFFICER (orthopædics) required. Post recognised F.R.C.S. Wide experience available under Area Orthopædic team. Appointment for 6 months in first instance. Vacant immediately.

Applications, with copies of 2 testimonials, to the Secretary.

WORCESTER (near). POWICK HOSPITAL. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (resident or non-resident). The post offers experience in all branches of psychiatry, including all forms of modern treatment and outpatient clinics. The Hospital has a high-admission rate, is recognised for the D.P.M., and has associated Child Guidance Clinics and a Mental Deficiency Institute similarly recognised. Arrangements are made for Medical Officers to attend at the Birmingham Medical School for instruction in neurology.

Applications, with full details and the names of 2 referees, to be forwarded to the Medical Superintendent.

WORCESTER. RONKSWOOD HOSPITAL. (300 Beds.) Applications invited for post of HOUSE SURGEON (Senior House Officer) in General Surgery.

Applications, with copies of testimonials, to the Hospital Secretary.

WORCESTER. RONKSWOOD HOSPITAL. (300 Beds.) Applications invited for post of Pre-registration HOUSE SURGEON in General Surgery.

Applications, with copies of testimonials, to the Hospital Secretary.

WREXHAM. MAELOR GENERAL HOSPITAL. (591 Beds.) Applications are invited for the post of HOUSE SURGEON at the above Hospital, to commence duties immediately. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.) and is a pre-registration post.

Applications, stating age, nationality, qualifications and experience, with copies of 2 recent testimonials, to be sent to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

Public Appointments

CORNWALL. COUNTY OF CORNWALL. Applications are invited for the post of SCHOOL MEDICAL OFFICER. Preference will be given to candidates who have had some experience in ophthalmology. The salary will be within the scale of £975–£50–£1375. A car is essential and there will be a travelling allowance in accordance with the County scale. Whitley Council service conditions apply.

Applications, stating age, qualifications and experience, together with a copy of a recent testimonial and the names of 2 persons to whom reference may be made, should be sent to the County Medical Officer, County Hall, Truro, not later than 24th September, 1955.

E. T. VERGER, Clerk of the County Council.

County Hall, Truro.

FACTORY DOCTORS. Factories Acts, 1937 and 1946. The following appointments as Appointed Factory Doctor are vacant. Apply to Chief Inspector of Factories, 19, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of applications*
WHALEY BRIDGE	CHESHIRE	24TH SEPTEMBER, 1955
DEAL	KENT	24TH SEPTEMBER, 1955

AUSTRALIA. COMMONWEALTH OF AUSTRALIA. DEPARTMENT OF HEALTH, MARIBYRNONG, VICTORIA. Applications are invited for a position of MEDICAL OFFICER (Research Physiologist).

Salary: £1646–£2498 p.a.

Duties: to establish and take charge of a small unit to be engaged on physiological research connected with defence science problems.

Qualifications: university degree in medicine, preferably with some years of experience in physiological research.

Conditions of appointment:

(*a*) The position is a temporary one but the tenure is unlimited. However, the successful applicant may choose to enter into an agreement for a 3–5-year contract of employment in Australia. In this case, the Commonwealth will bear return fares, together with the cost of removing each way the appointee's furniture and effects up to a maximum cost of £A500; £A250 each way.

(*b*) Appointment will be made within the salary range stated according to age, qualifications and research experience of the successful applicant. Salaries quoted are Australian currency.

(*c*) The appointee may be attached to an establishment in England for a period of approximately 6 months to obtain experience in specialised techniques and will be seconded to the Department of Supply.

(*d*) Under specified conditions, first-class boat fare (if first-class berth available) for the appointee and dependants (wife and dependent children) will be paid by the Commonwealth.

Further particulars and application forms obtainable from Senior Representative (A.P.35), Department of Supply, Australia House, Strand, London, W.C.2, with whom applications should be lodged by 26th September, 1955.

BARROW-IN-FURNESS. COUNTY BOROUGH OF BARROW-IN-FURNESS. Applications are invited from fully qualified and registered medical practitioners for the appointment of ASSISTANT MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER. Salary is as laid down by the Medical Council of the Whitley Councils for the Health Services (£975 p.a., rising by annual increments of £50 to £1375 p.a.) and the point of entry will be fixed in accordance with the qualifications and experience of the person appointed. The appointment will be subject to the Corporation's general conditions of service and is superannuable. As the duties are mainly in connection with the School Health Service and Maternity and Child Welfare Service, the possession of the D.P.H. or D.C.H. will be an advantage.

Further particulars and application forms may be obtained from the Medical Officer of Health, Town Hall, Barrow-in-Furness. Completed applications must be received by the undersigned not later than NOON on Monday, 26th September, 1955. LAWRENCE ALLEN, Town Clerk.

Town Hall, Barrow-in-Furness.

DERBYSHIRE COUNTY COUNCIL. County Health DEPARTMENT. SENIOR MEDICAL OFFICER FOR MENTAL HEALTH. Applications are invited from registered medical practitioners for this whole-time superannuable post. Experience in dealing with educationally subnormal children and mental defectives is necessary for carrying out the duties. The possession of a Diploma in Public Health or in Psychological Medicine would be regarded as an important additional qualification. Salary £1415–£50(7) and £65(1)–£1830 p.a. Car allowance.

Particulars and application forms obtainable from Dr. J. B. S. MORGAN, County Medical Officer, St. Mary's Gate, Derby, to whom they should be returned by 19th September, 1955.

DUBLIN. LOCAL APPOINTMENTS COMMISSION. Medical positions vacant. (*a*) OPHTHALMIC SURGEON (part-time); (*b*) E.N.T. SPECIALIST (part-time), Limerick County Council. Inclusive salary for each post £800.

Application forms and particulars from the Secretary, 45, Upper O'Connell-street, Dublin. Latest time for receiving completed application forms 5 P.M. on 23rd September, 1955.

HER MAJESTY'S OVERSEA CIVIL SERVICE. Medical BRANCH—KENYA. Vacancies exist for MEDICAL OFFICERS for general duties in the Medical Department of Kenya. Successful candidates may be posted to any station in Kenya. During the earlier years of service an officer will be expected to carry out general medical and surgical duties including a varying amount of public health administration. In most stations, even if remote from the larger towns, it is possible for an officer to maintain interest in any particular branch of medicine or surgery to which he is attracted. As far as possible the interests of an officer are considered when postings are made. The work of every Medical Officer is based on a hospital which may vary in size and facilities from a small district hospital meeting the needs of a comparatively primitive community to a large and modern provincial hospital. Appointments can be made on a permanent basis with pension (non-contributory) at age of 55, or on short-term contract with gratuity payable on satisfactory completion of service. Salary ranges from £1116 to £1836 a year; starting point is determined by experience and 4 extra increments are given to successful candidates possessing the M.R.C.P., D.P.H., or other approved higher qualifications. Temporary cost-of-living allowance at the rate of 10% of salary is also payable, subject to a maximum of £162 a year making gross emoluments of £1228–£1998 a year. Permanent Medical Officers are eligible to be considered at any time for promotion to super-scale posts in Kenya and other territories in medical administration or, if they possess higher qualifications and suitable experience, in specialist posts. Quarters are generally available at rental of 10% of salary. Free passages in both directions for Officer and wife and up to cost of 1 adult fare for children. Taxation at local rates. Annual local leave permissible and generous home leave granted after each tour of from 40 to 48 months. Educational facilities are available. Candidates must possess medical qualification registrable in the United Kingdom and at least 1 years postgraduate hospital experience.

Application forms from Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD.117/7/02).

BUCKS COUNTY COUNCIL. Applications are invited from registered medical practitioners for the appointment of DEPUTY COUNTY MEDICAL OFFICER AND DEPUTY PRINCIPAL SCHOOL MEDICAL OFFICER. Salary on scale £1675–£100(2)–£62 10s.–£1937 10s. p.a. This scale will shortly be reviewed as the population of the county now exceeds 400,000. Travelling and subsistence allowances on the Council's scale will be paid. The appointment is superannuable and subject to medical examination.

Further particulars and forms of application may be obtained from the undersigned at County Hall, Aylesbury, to whom completed applications must be delivered by Tuesday, 20th September, 1955.

R. E. MILLARD, Clerk of the Bucks County Council.

August, 1955.

ROYAL ARMY MEDICAL CORPS. New Conditions and Terms of Service. Regular and Short-service Commissions. New and improved conditions of service in the R.A.M.C. are now offered to Medical Practitioners. These include :—

Permanent commissions direct from civil life.

After 1 years satisfactory service, grant of £1500 (taxable) to officers appointed to a regular commission after 1st October, 1953.

Antedates (which count towards pay and promotion) of up to 7 years for civilian experience, and credit for former commissioned service as a medical or combatant officer in any of the 3 services.

A 3-year Short-service Commission offers an alternative to National Service with higher rates of pay and allowances and eligibility for married quarters.

Increases in pay for Captains and above.

Increased rates of specialist pay.

A limited number of vacancies exist for experienced specialists of the Consultant or Senior Registrar grade.

Excellent facilities are offered for training selected young medical officers as specialists. Approximately 1 Medical Officer in 3 will be selected for specialist training.

For full details application should be made to the Assistant Director-General, A.M.D.2, The War Office, London, S.W.1. Telephone inquiries should be made to the Staff Captain, J. A. WALE, M.B.E., No. GROsvenor 8040, Ext. 548.

SUDAN GOVERNMENT. The Ministry of Health, Sudan Government, invites applications for the following posts :—

MEDICAL PATHOLOGIST. Candidates must have Honours Degree and must be fully literate in either Arabic or English. Age limits 32–45 years. Salary range from £E1750 to £E2330 p.a. (for Junior Specialist) or a fixed salary of £E2500 p.a. (for Specialist).

BACTERIOLOGIST. Candidates should have specialist experience in bacteriology, and in a reputed Institute. Salary range from £E1750 to £E2330 p.a. (for Junior Specialist) or a fixed salary of £E2500 p.a. (for Specialist).

Male SPECIALIST, PHYSICIANS, SURGEONS AND GYNÆCOLOGIST. Candidates must possess adequate professional qualifications for the type of post, viz., M.R.C.P., F.R.C.S., or M.R.C.O.G., or internationally recognised equivalents. Age should be 28–43. Salary range £E1750–£E2330 p.a. (for Junior Specialists) or fixed rate of £E2500 p.a. (for Specialists).

Candidates for these posts may apply for secondment from the National Health Service for a period of up to 3 years under the terms of circular letter No. RHB/(52)106BG(52)101 of 30th September, 1952.

All the above appointments will be on short-term contracts for a period of up to 5 years and starting rates of pay will be determined according to age, experience and qualifications. In certain cases a cost-of-living allowance is also payable at present. A bonus of 1 months salary for each year of service, subject to a maximum of 6 months pay is payable on satisfactory completion of the contract. Outfit allowance of £E50 is payable when the contract is signed. Free passage on appointment. Annual leave after the first tour.

Further particulars and application form will be sent on application to Dr. E. P. PRATT, Consultant Physician to the Sudan Government, 93, Harley-street, London, W.1. Please quote the appointment concerned and give name and address in block letters.

WOLVERHAMPTON. COUNTY BOROUGH OF WOLVERHAMPTON. DEPUTY MEDICAL OFFICER OF HEALTH AND DEPUTY PRINCIPAL SCHOOL MEDICAL OFFICER. Applications are invited for the above whole-time appointment at a salary of £1533–£100(2)–£50–£1783. Car allowance.

Conditions of appointment and details of duties may be obtained from the Medical Officer of Health, 59, Waterloo-road, Wolverhampton, to whom applications, giving particulars of qualifications, training, and experience, with names of 3 persons for reference, should be addressed by 19th September, 1955.

Town Hall, Wolverhampton. A. G. DAWTRY, Town Clerk.

THE MEDICAL SERVICE OF THE ROYAL NAVY

VACANCIES FOR MEDICAL OFFICERS

Candidates are invited for Short Service Commissions of 4 years, on termination of which a gratuity of £600 (tax free) is payable. Ample opportunity is granted for transfer to Permanent Commissions on completion of 1 year's total service. Officers so transferred are paid instead a grant of £1500 (taxable).

All entrants are required to be British subjects whose parents are British subjects, to be medically fit, and to pass an interview.

Full particulars from the Admiralty Medical Department, Queen Anne's Mansions, St. James's Park, London, S.W.1.

MINISTRY OF SUPPLY. Medical Officers. The Ministry of Supply have vacancies for 2 full-time unestablished INDUSTRIAL MEDICAL OFFICERS in Establishments in the Provinces, and applications are invited from registered medical practitioners of British nationality. Previous experience in industrial medicine or the possession of the Diploma in Industrial Health will be an asset. Opportunities to compete for establishment occur annually, and salary will be on scale £1420–£2000 p.a.

Applications by letter, stating age, sex, qualifications and experience, should be addressed to the Establishment Officer, Est.I.d.2, Ministry of Supply, Room 220, Carlton Hotel, Haymarket, London, S.W.1, from whom further information can be obtained. Applications should arrive not later than 24th September, 1955.

WARRINGTON. COUNTY BOROUGH OF WAR-RINGTON. Applications are invited from suitably qualified medical practitioners for the appointment of ASSISTANT MEDICAL OFFICER AND SCHOOL MEDICAL OFFICER (Male or Female). The salary is £975 p.a., rising by annual increments of £50 to a maximum of £1375 p.a. Experience in dealing with children is essential, but possession of the D.P.H. or D.C.H. would be an advantage. The duties will be mainly clinical in connection with Maternity and Child Welfare or School Medical Services, as may be required. A car allowance is payable. The post is superannuable and subject to a satisfactory medical examination.

Applications, giving full details of age, qualifications, and experience, together with the names of 2 persons to whom reference can be made, should be forwarded to the undersigned not later than 24th September, 1955.

ERIC H. MOORE, Medical Officer of Health and Principal School Medical Officer.

Health Department, Sankey-street, Warrington, August, 1955.

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."

COUNTY BOROUGH OF CARDIFF. Llanrumney HOUSING ESTATE. Applications are invited for site available near Monmouthshire boundary of this Estate with view to practising under the Act. Successful applicant to build house thereon at own cost in accordance with plans approved by Cardiff City Council. Approximate number of houses on estate 4000 ; 14,000 approximate population. Other doctors established thereat but scope for this addition. Temporary council house probably available pending completion of building.

Applications should be sent to undersigned not later than 30th September, 1955.

B. A. J. GRIFFITHS, Clerk, Cardiff Executive Council.

32, Cathedral-road, Cardiff.

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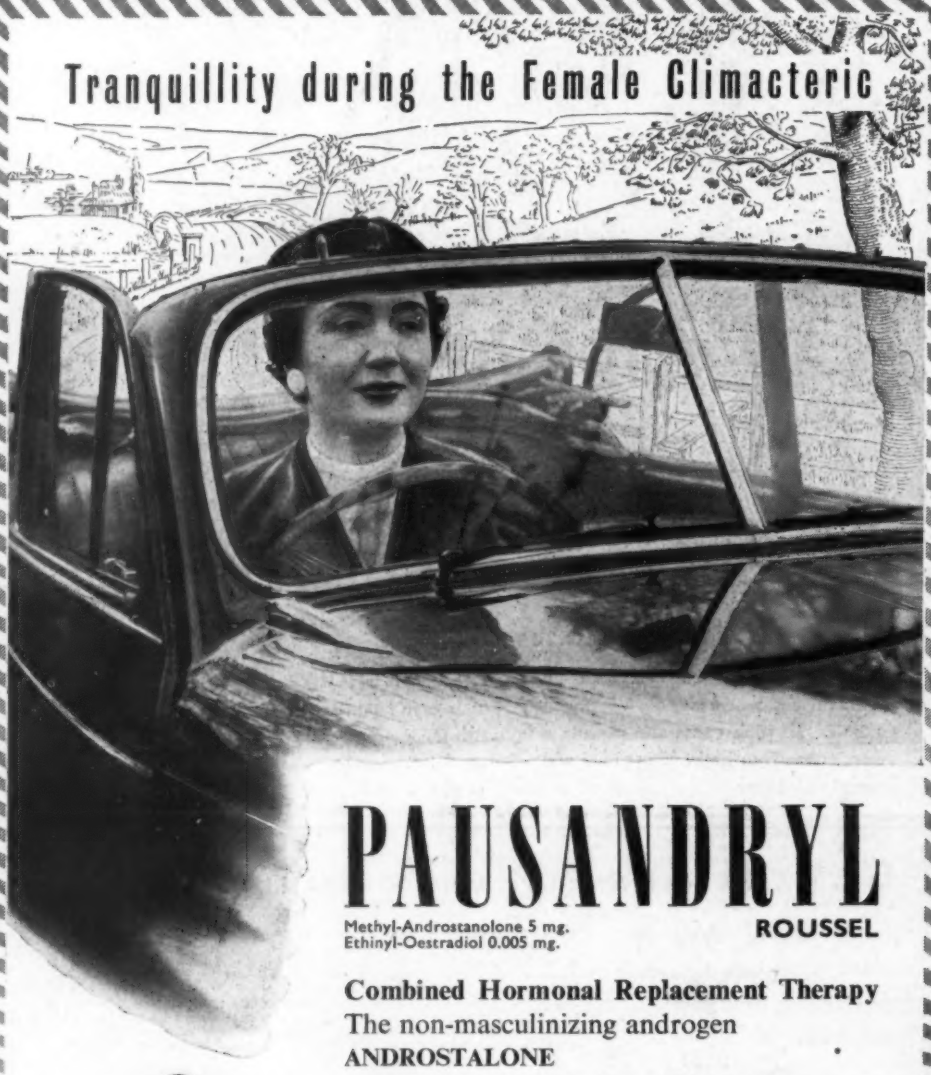

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